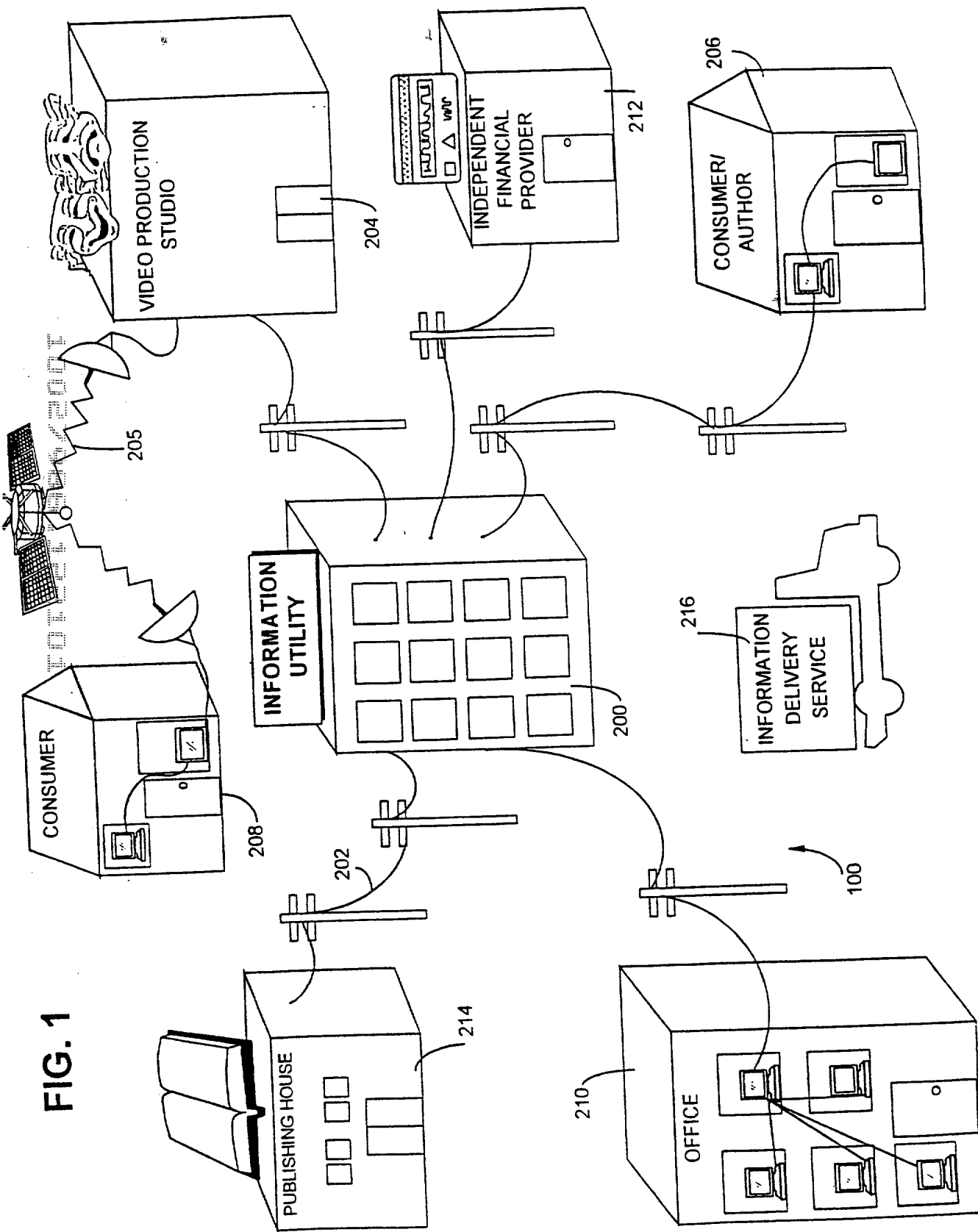


FIG. 1



TO VDE PARTICIPANT 1

TO VDE PARTICIPANT N

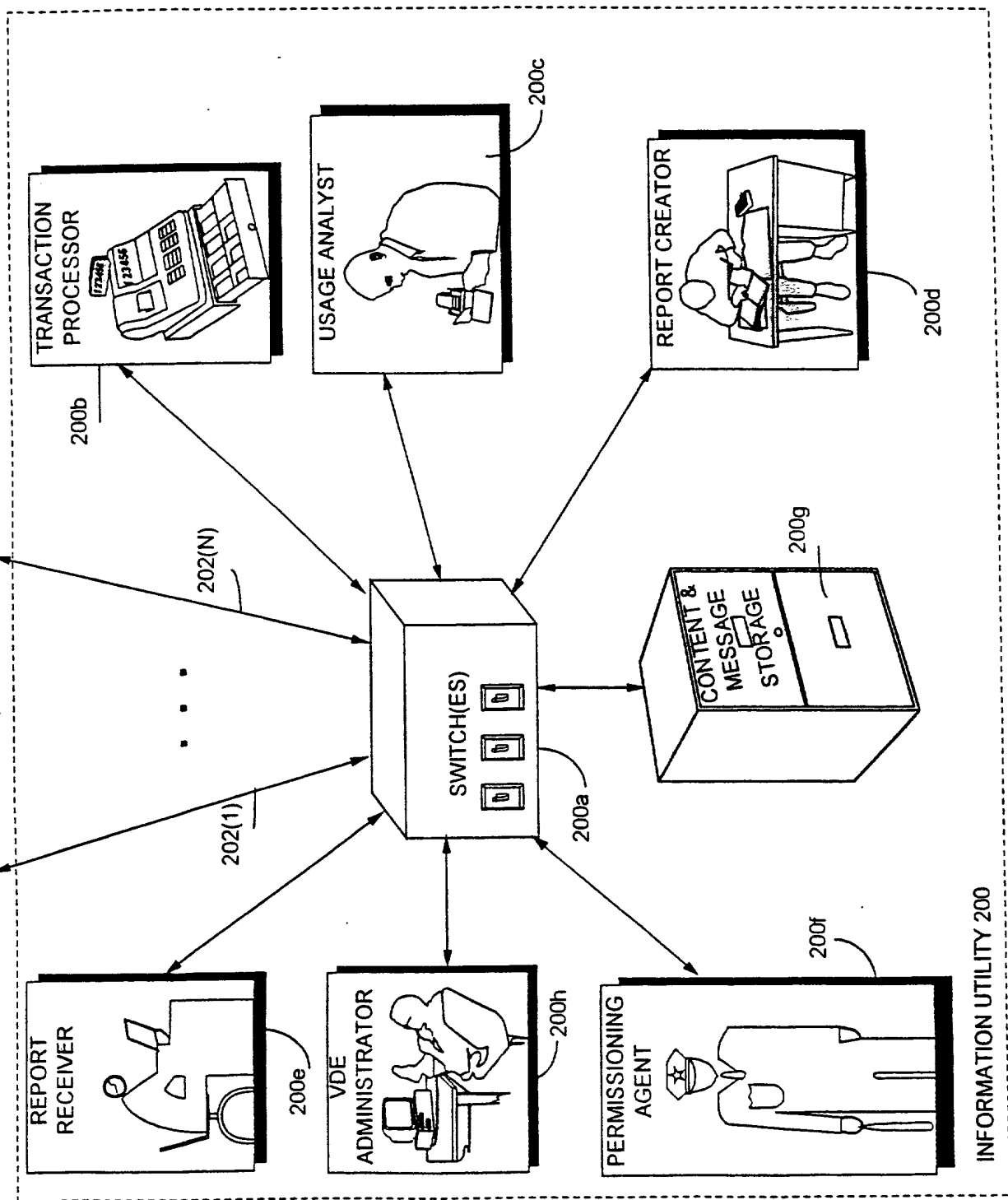


FIG. 1A

FIG. 2

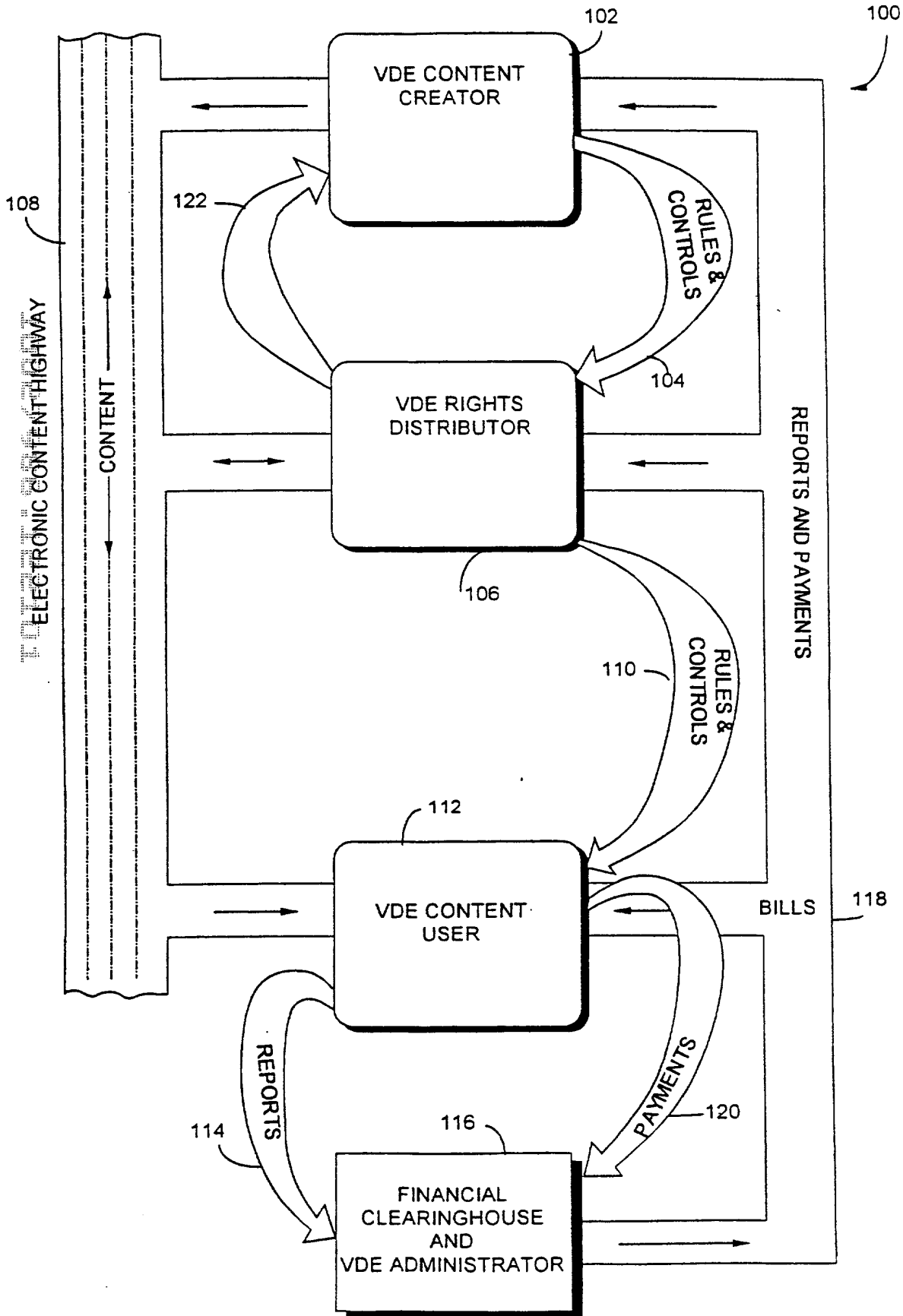
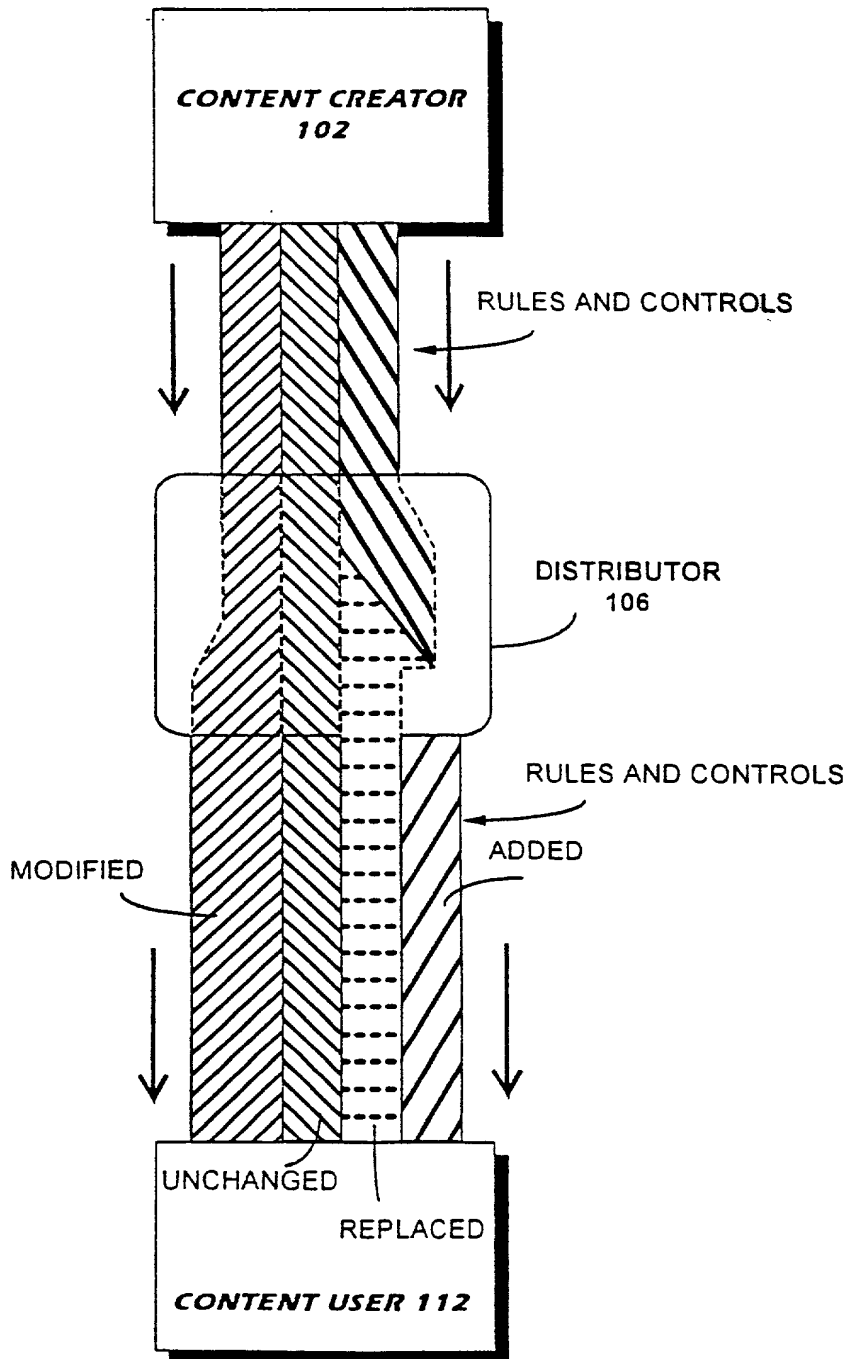
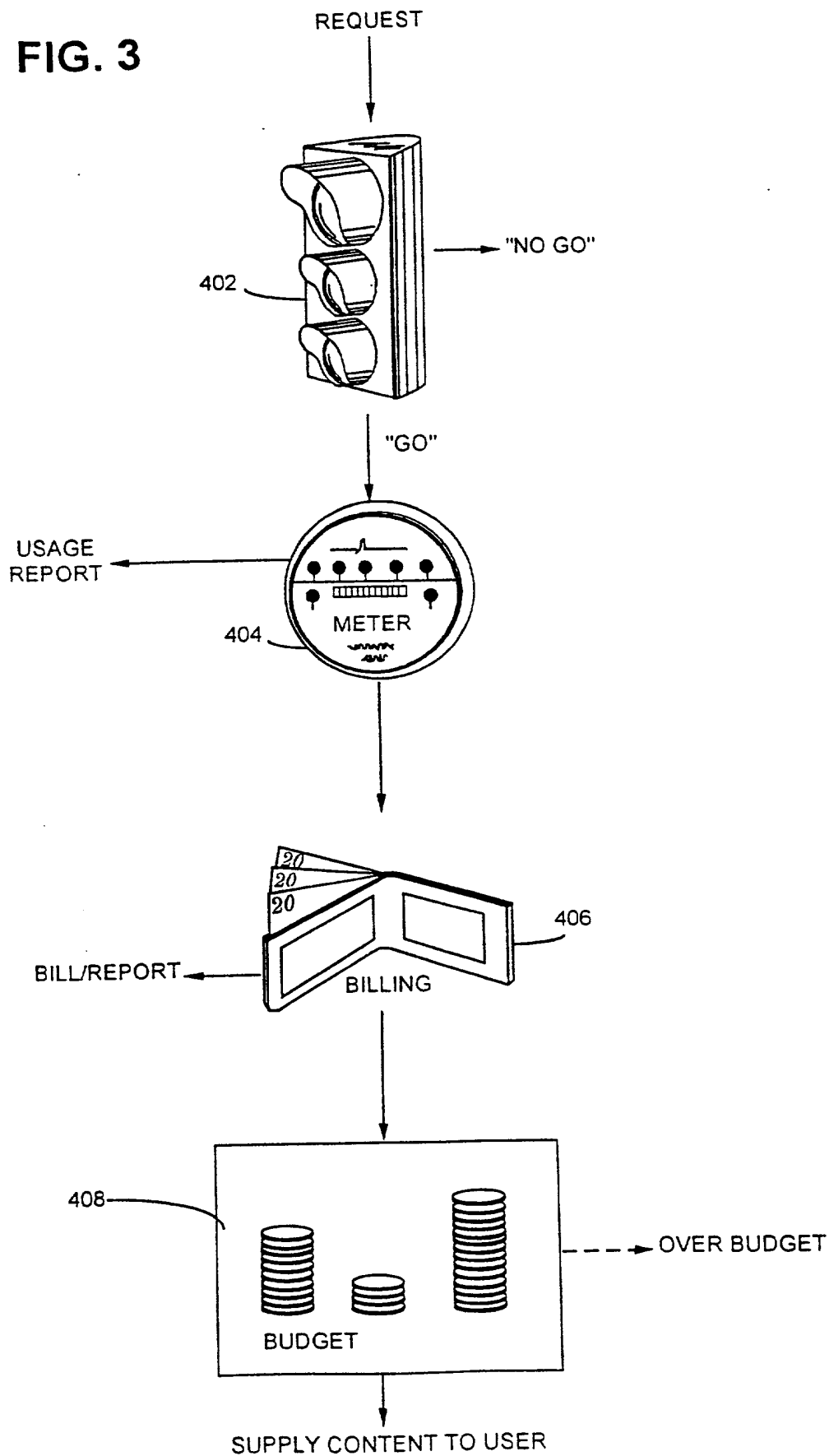


FIG. 2A



10027986 122404  
FOI b7E b7C b7D

FIG. 3



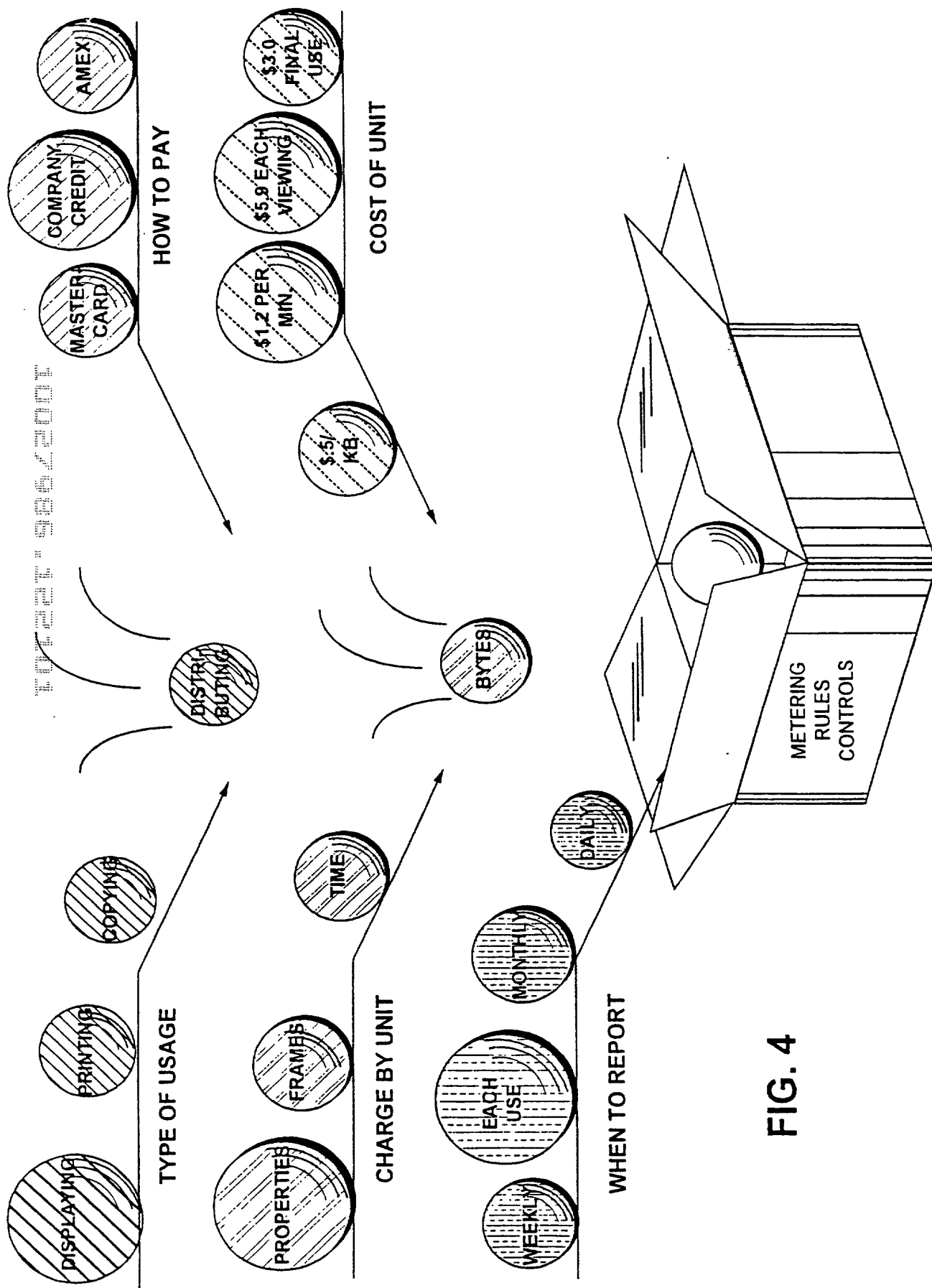


FIG. 4

FIG. 5A

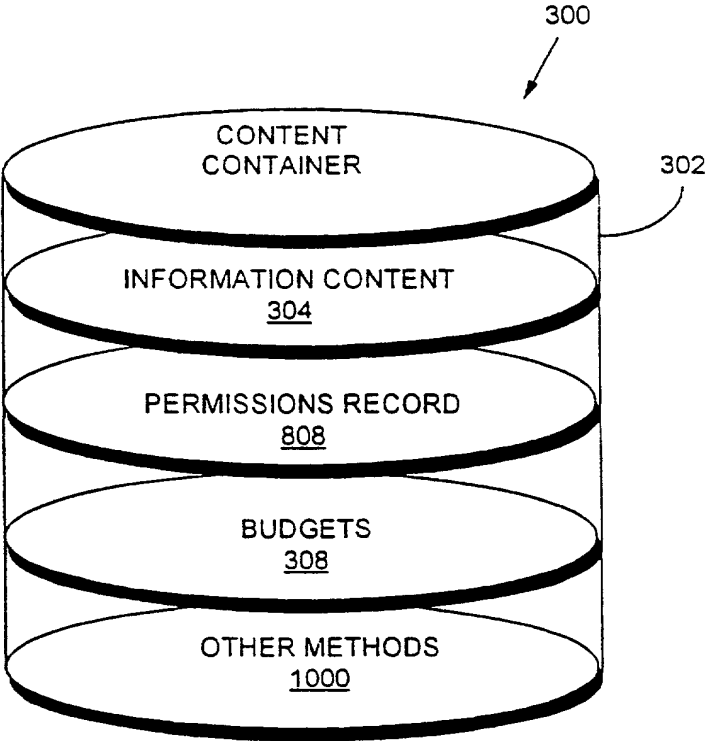


FIG. 5B

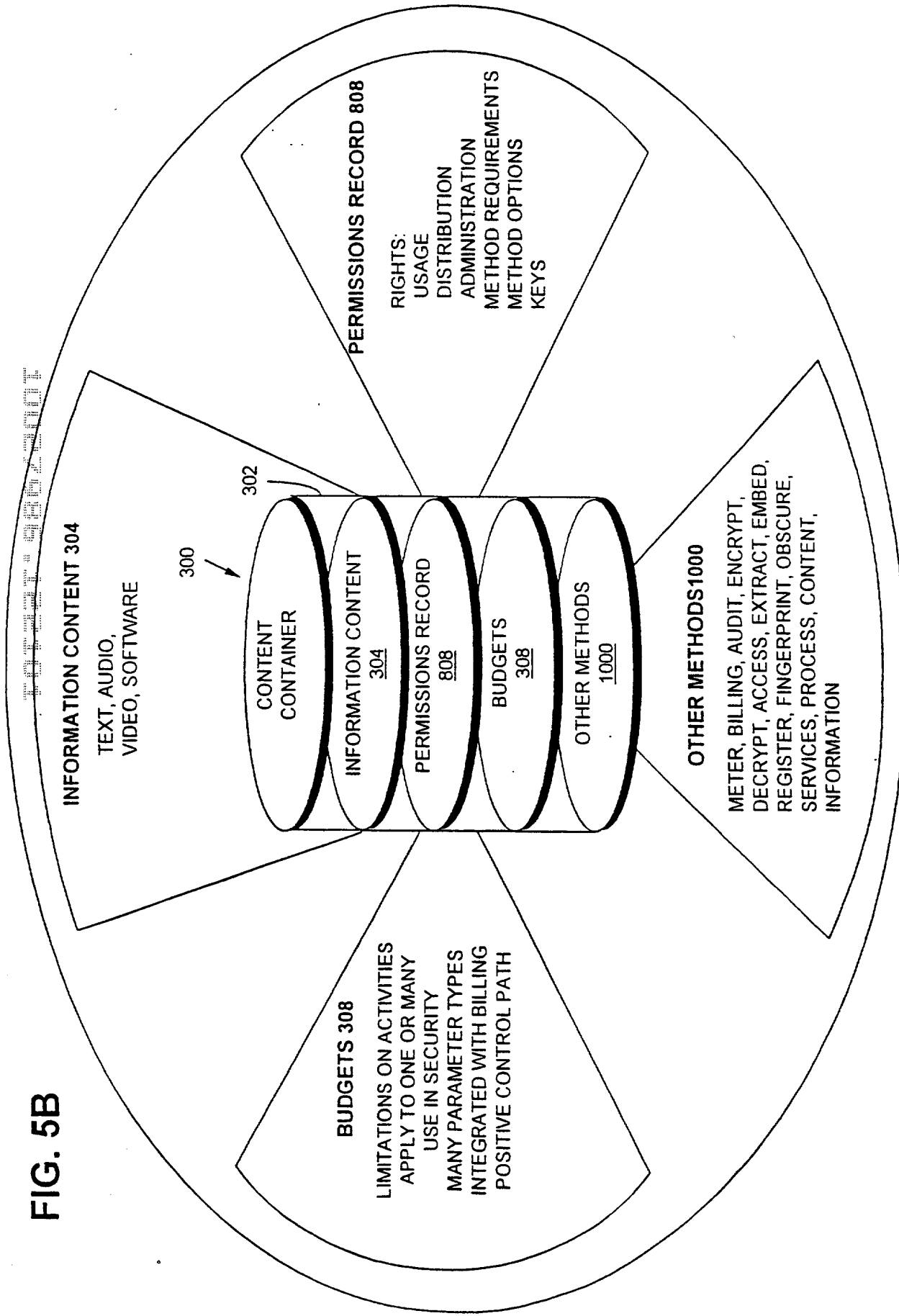
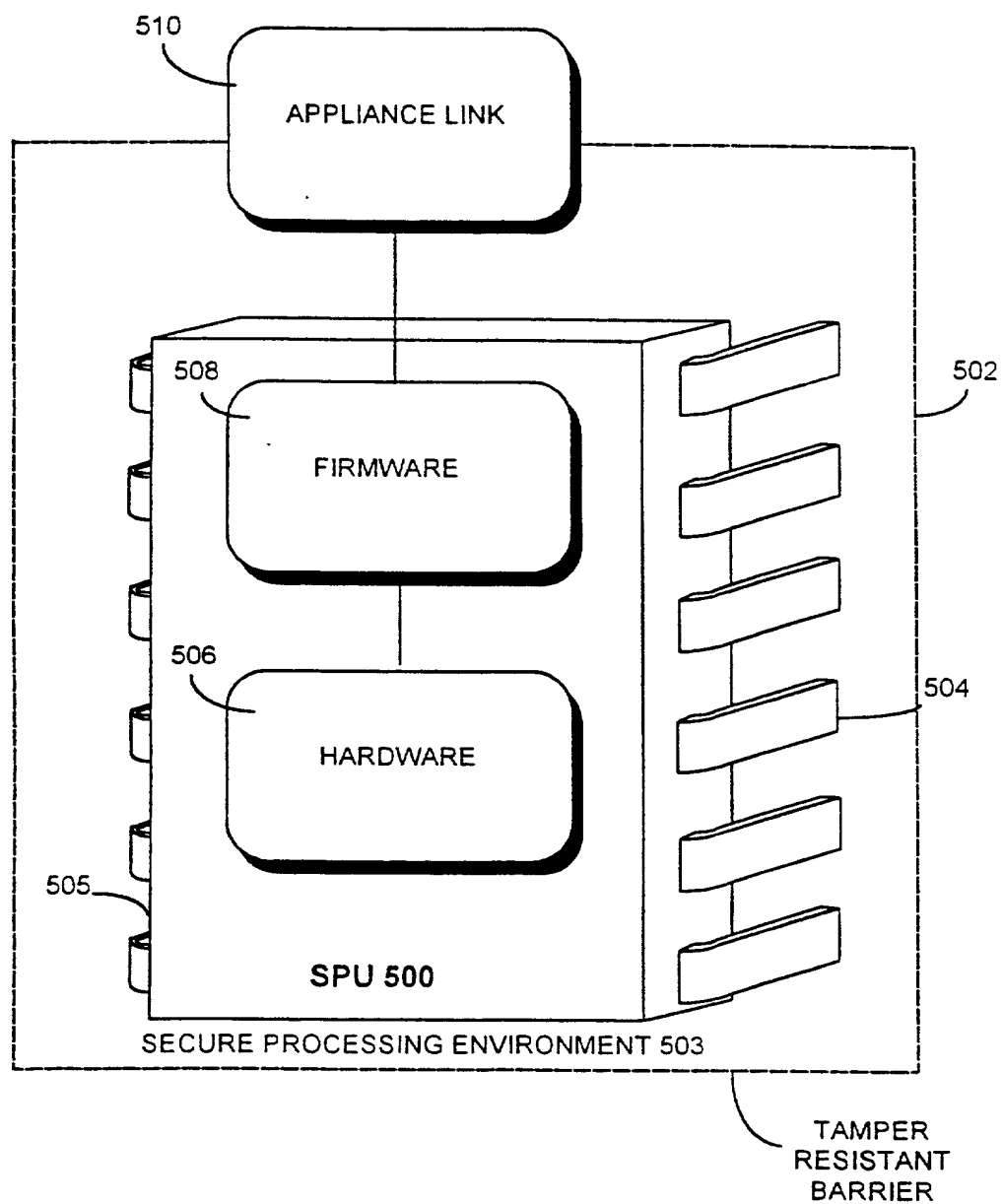


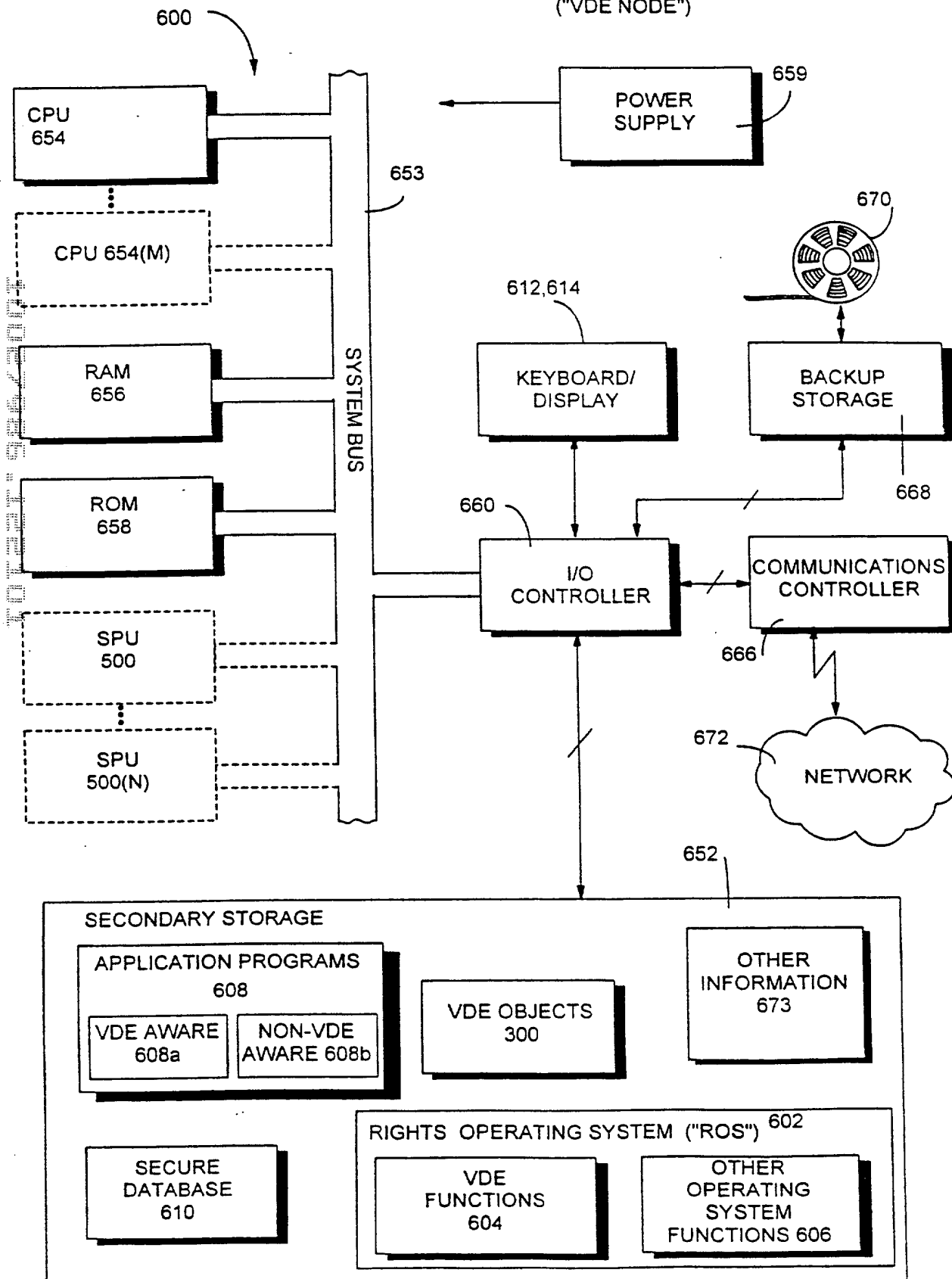


FIG. 6





**FIG. 8** ELECTRONIC APPLIANCE 600  
("VDE NODE")



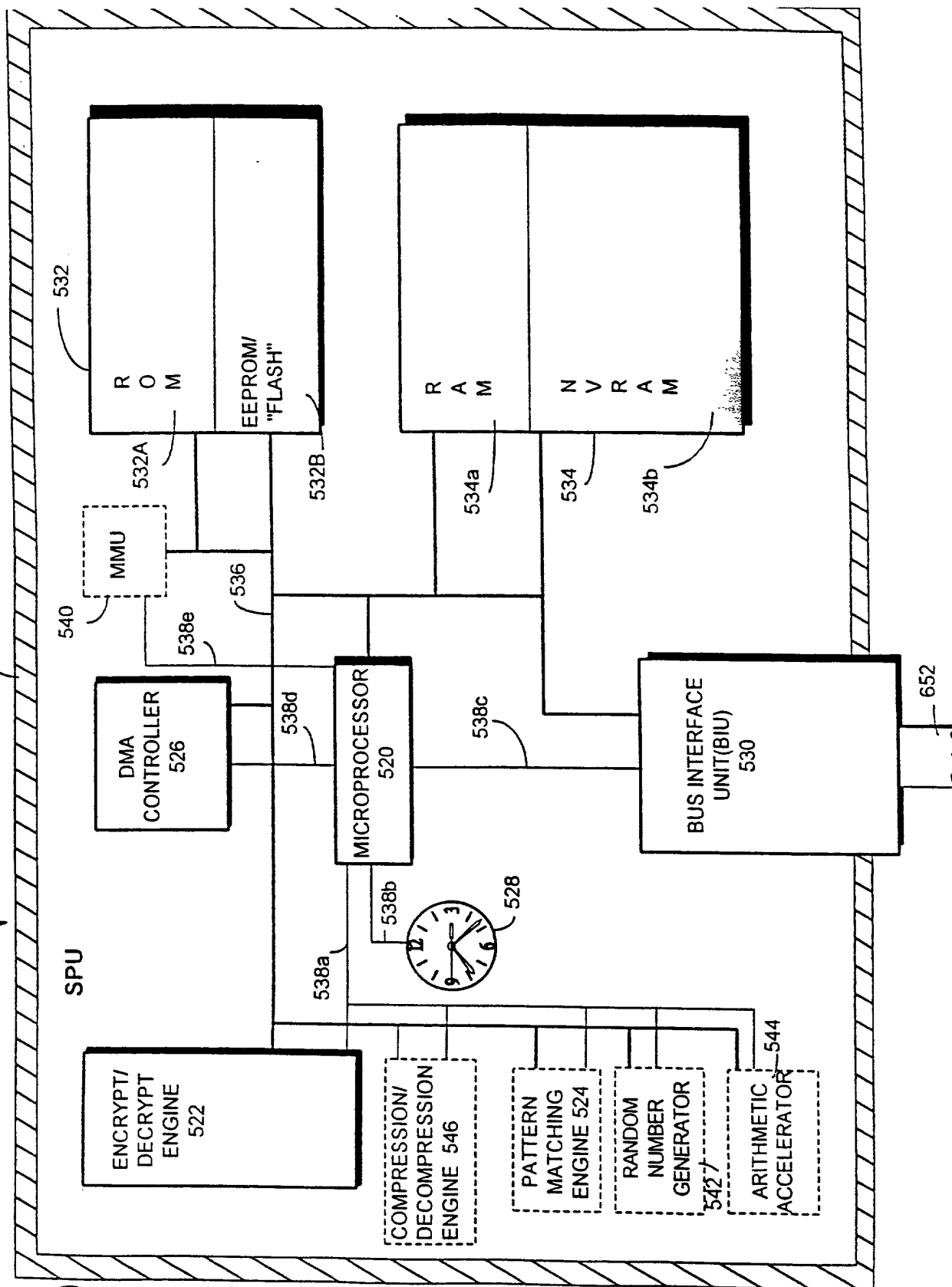


FIG. 9

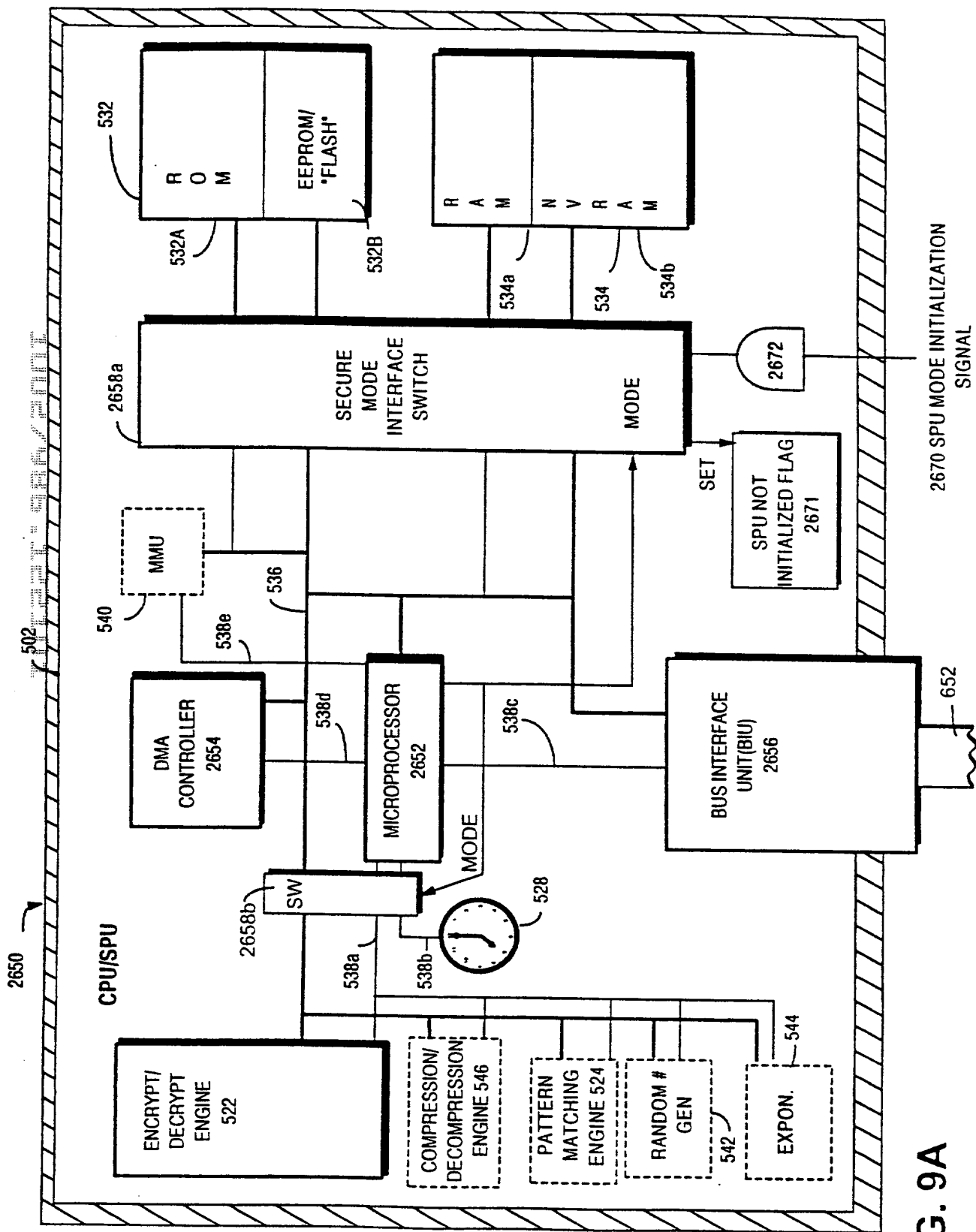
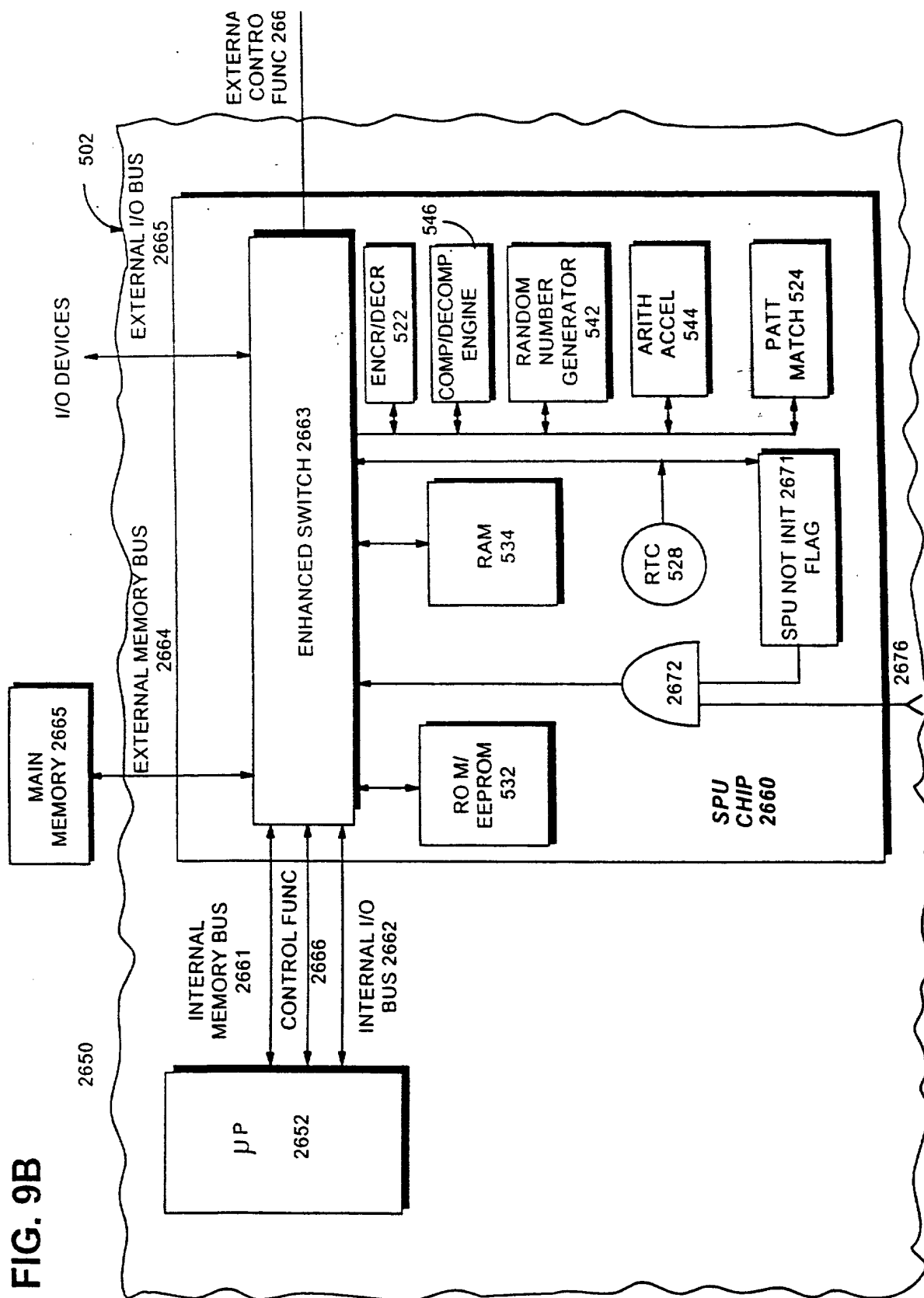


FIG. 9A



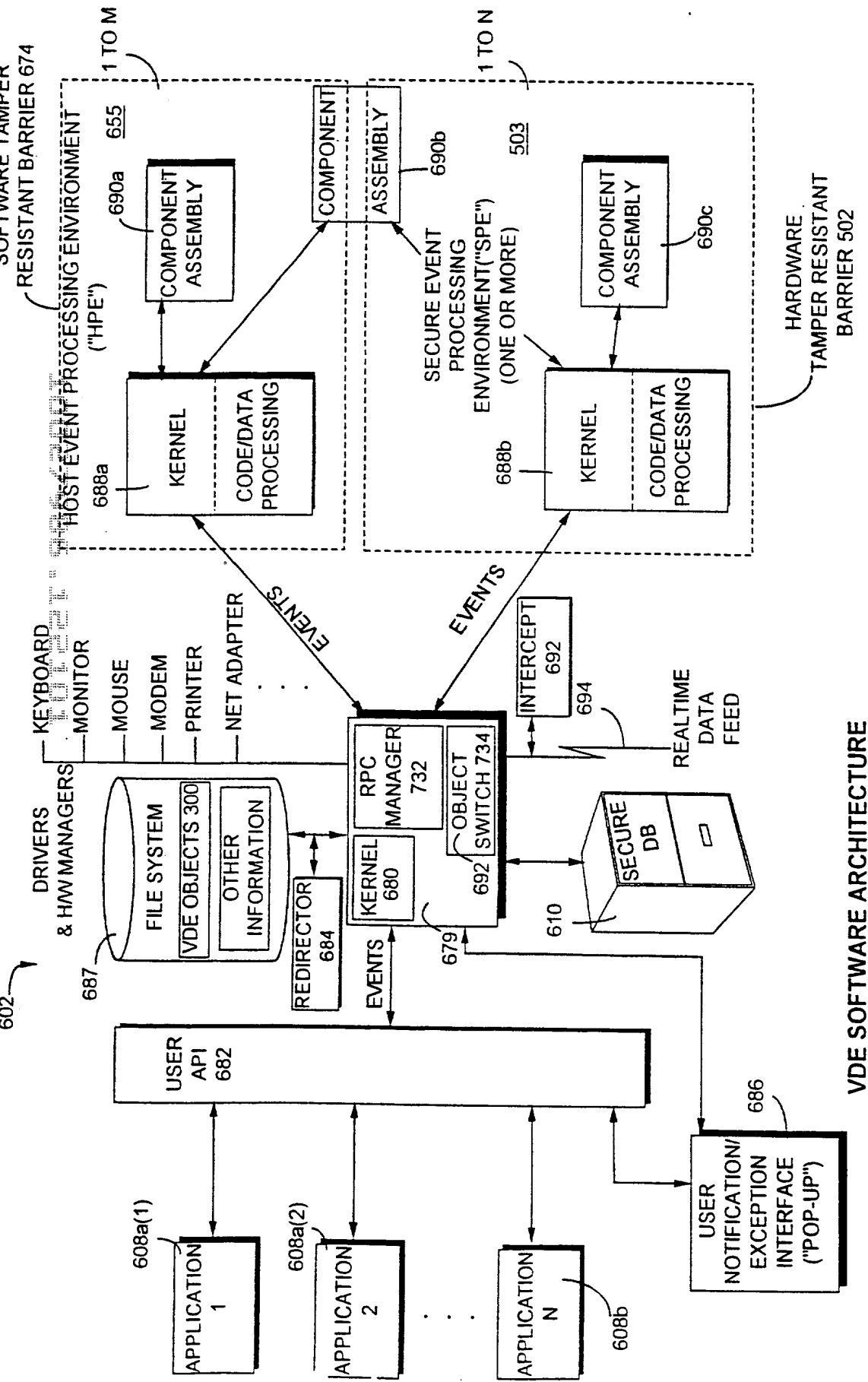
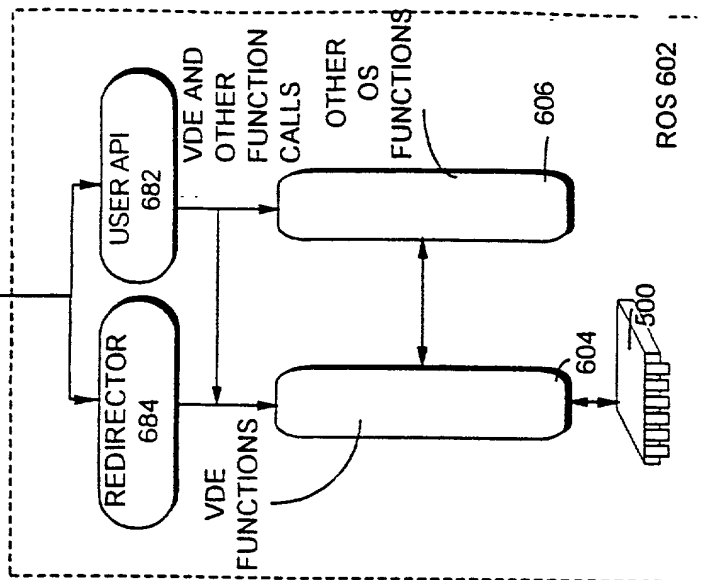
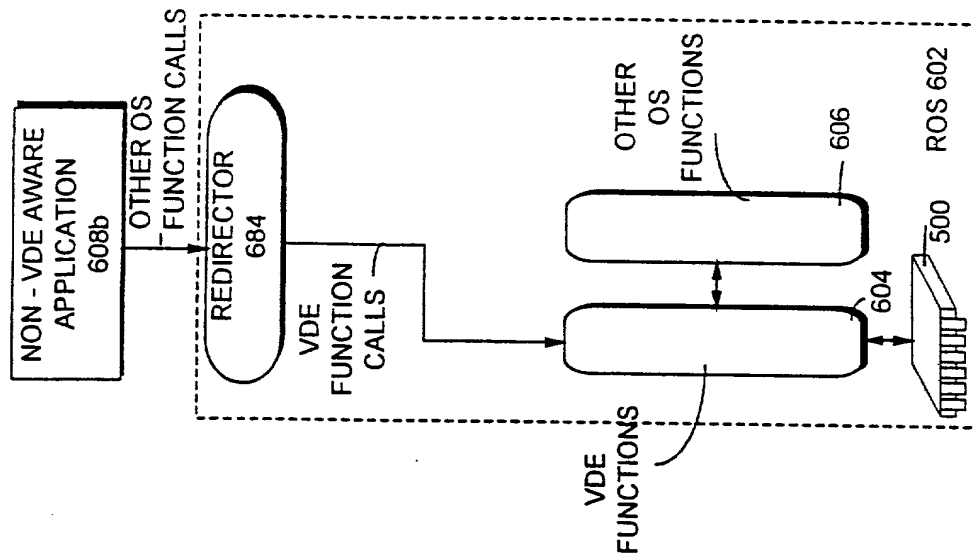
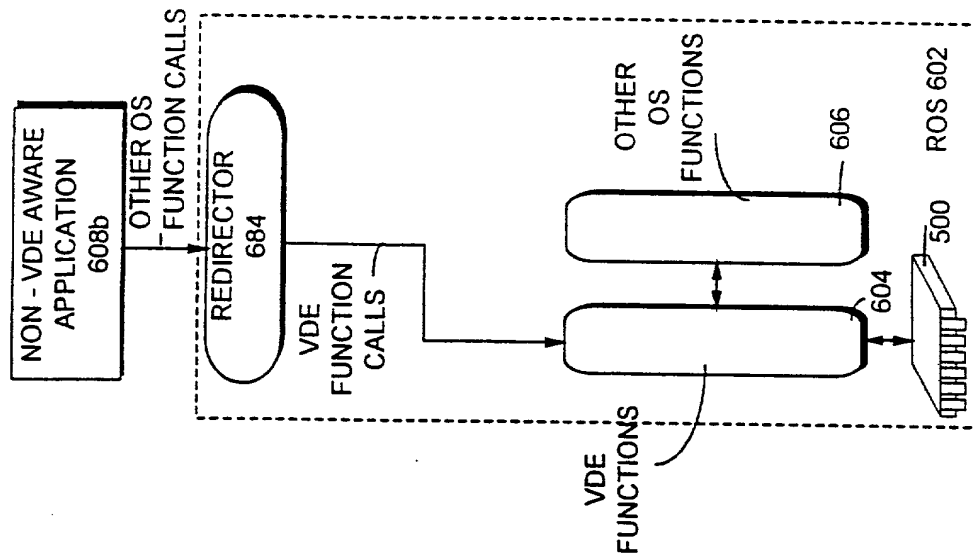
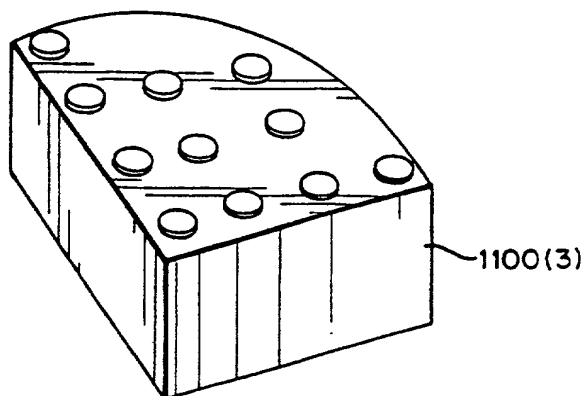
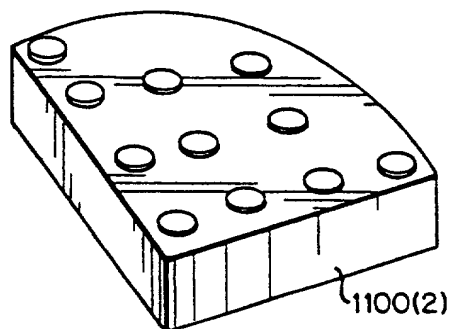
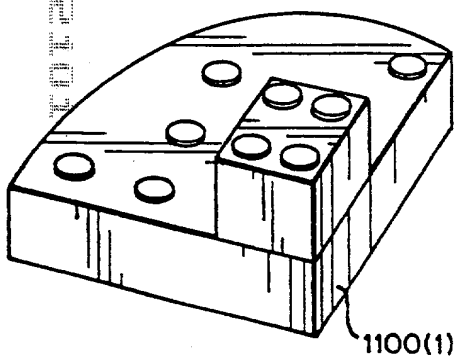
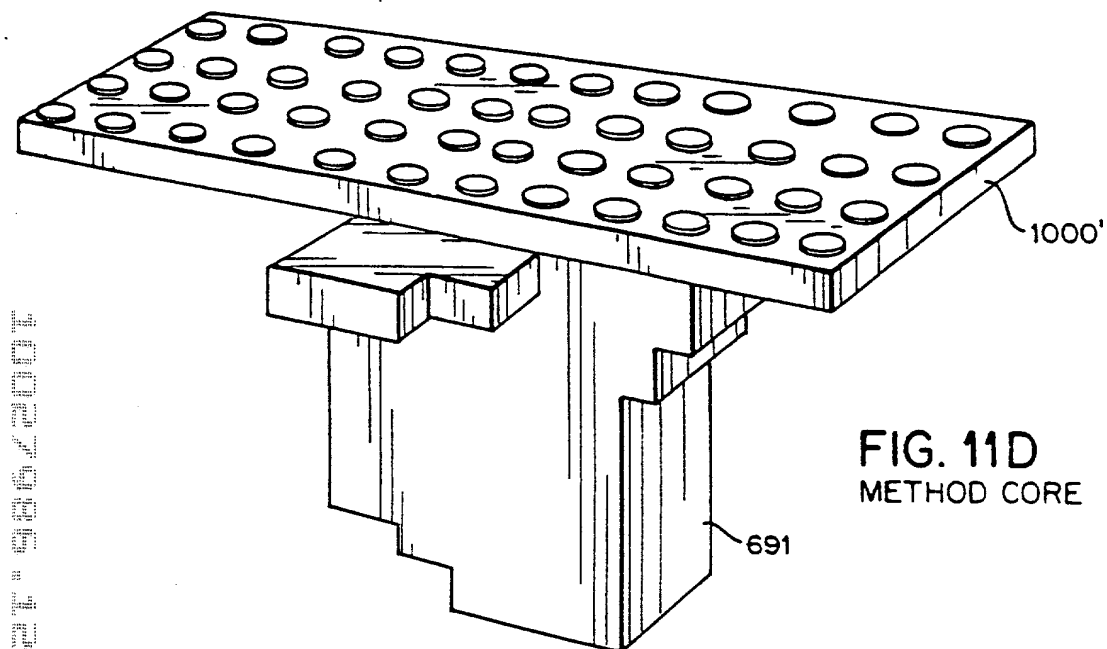


FIG. 10







10027986-122101

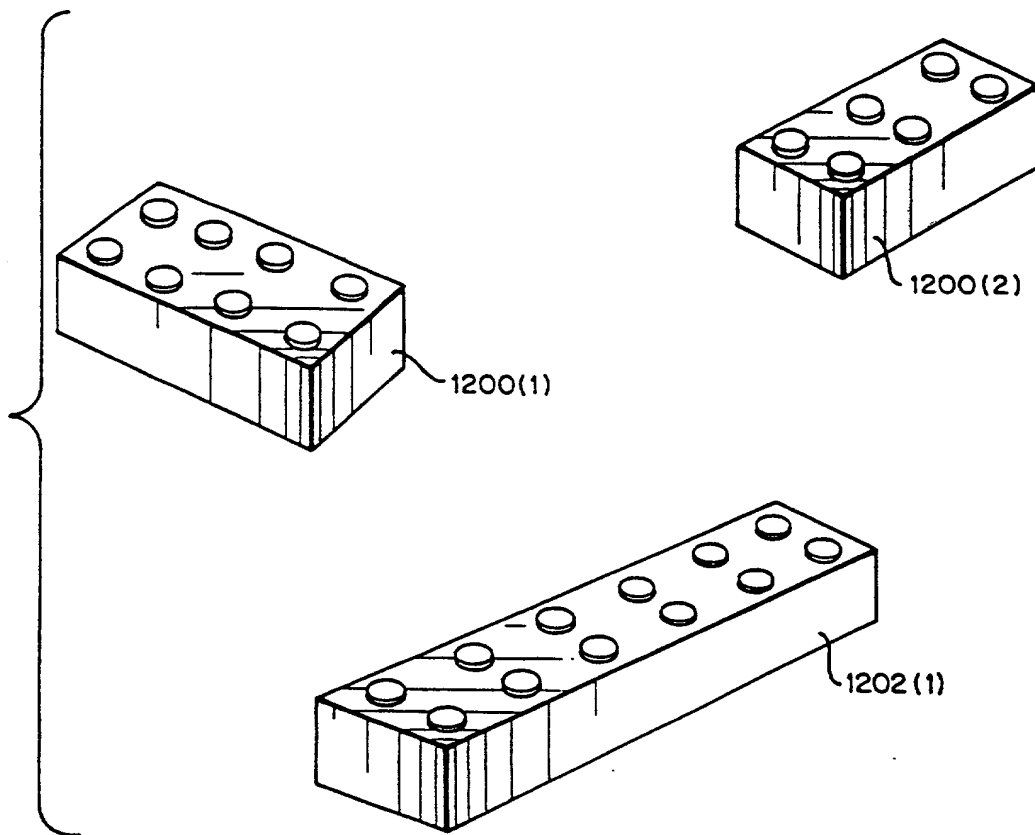
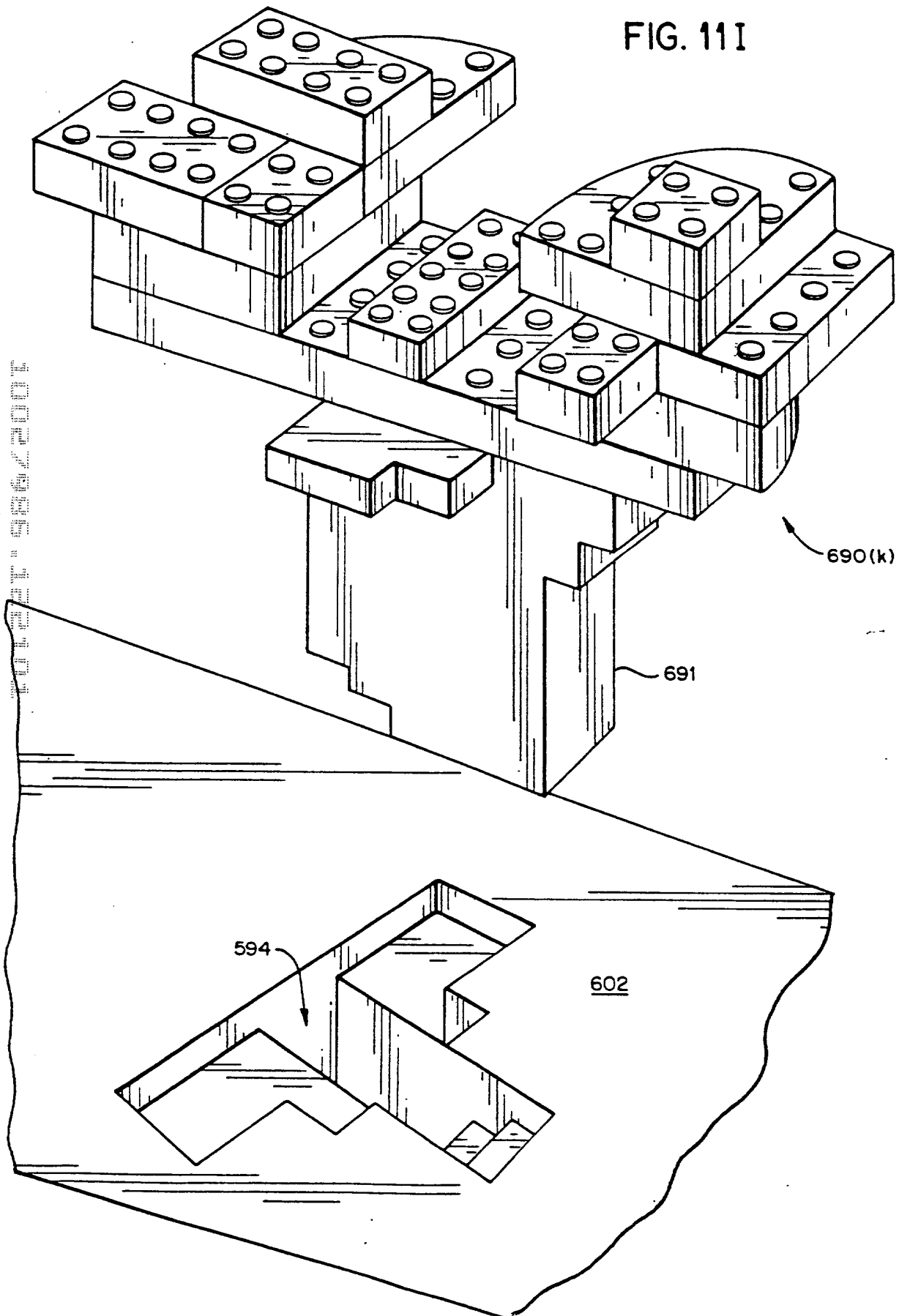


FIG. 11H  
DATA STRUCTURES

FIG. 11I



10027986-1001001

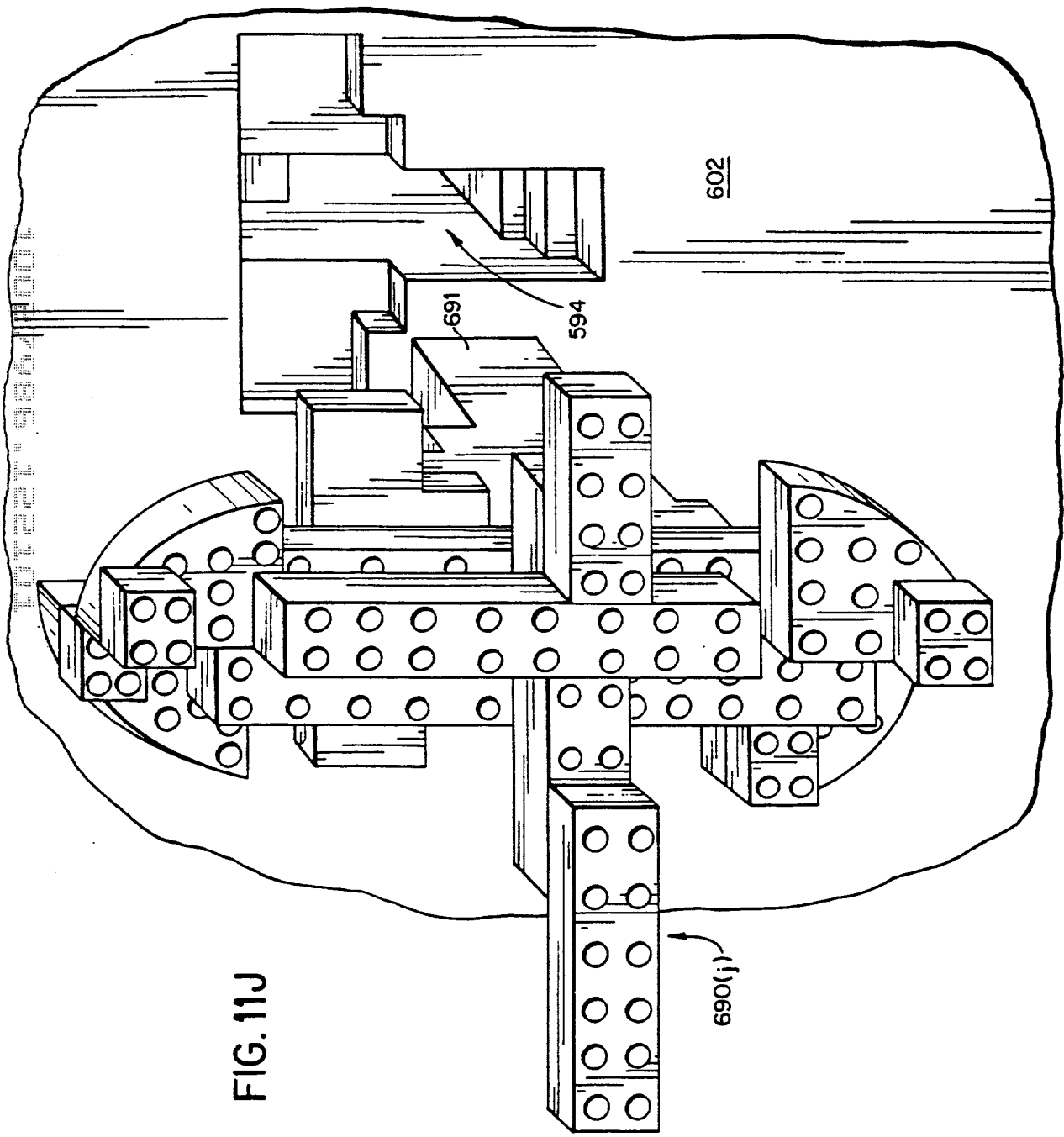


FIG. 11J

FILE SYSTEM 687

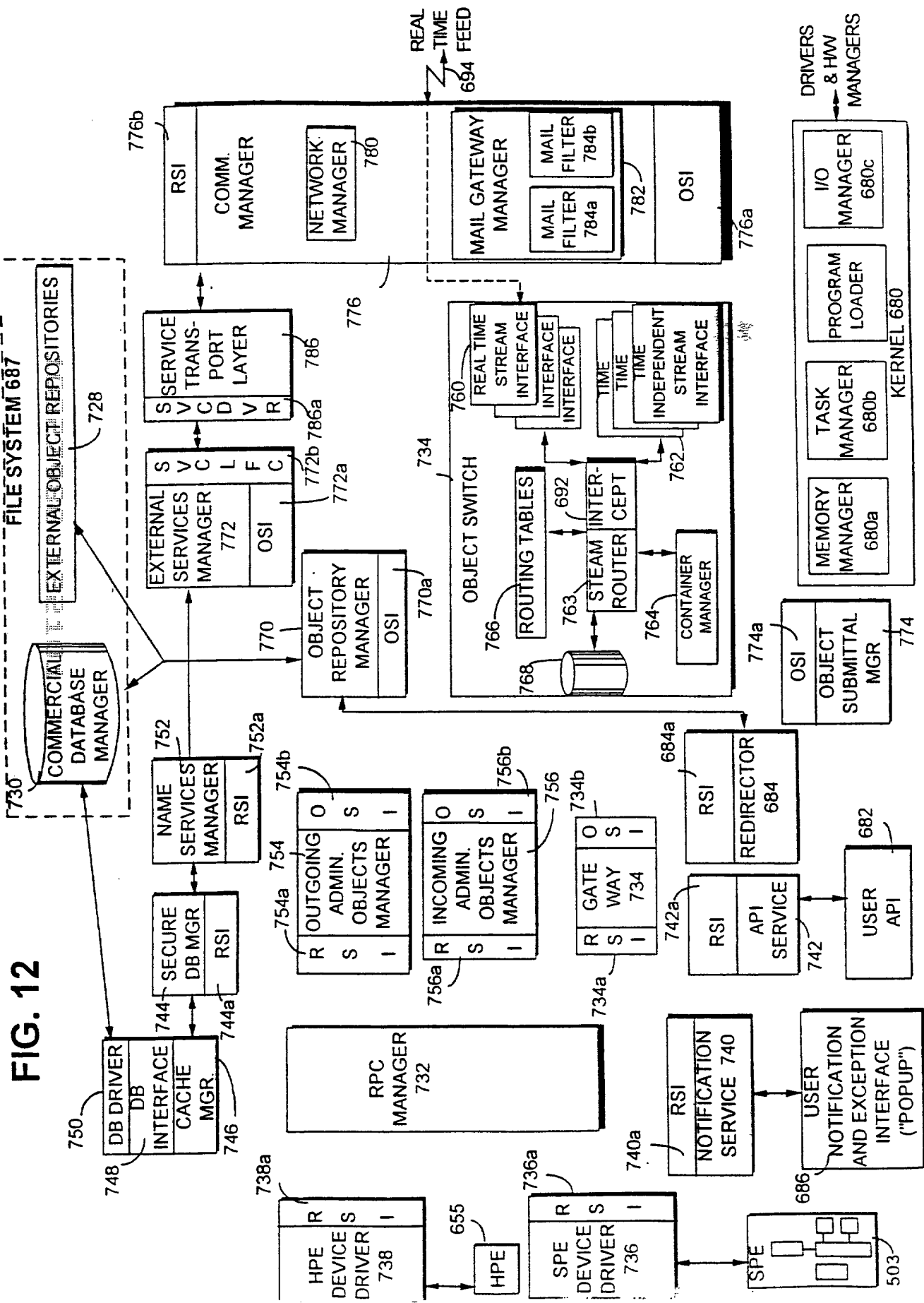


FIG. 12A  
OBJECT CREATION

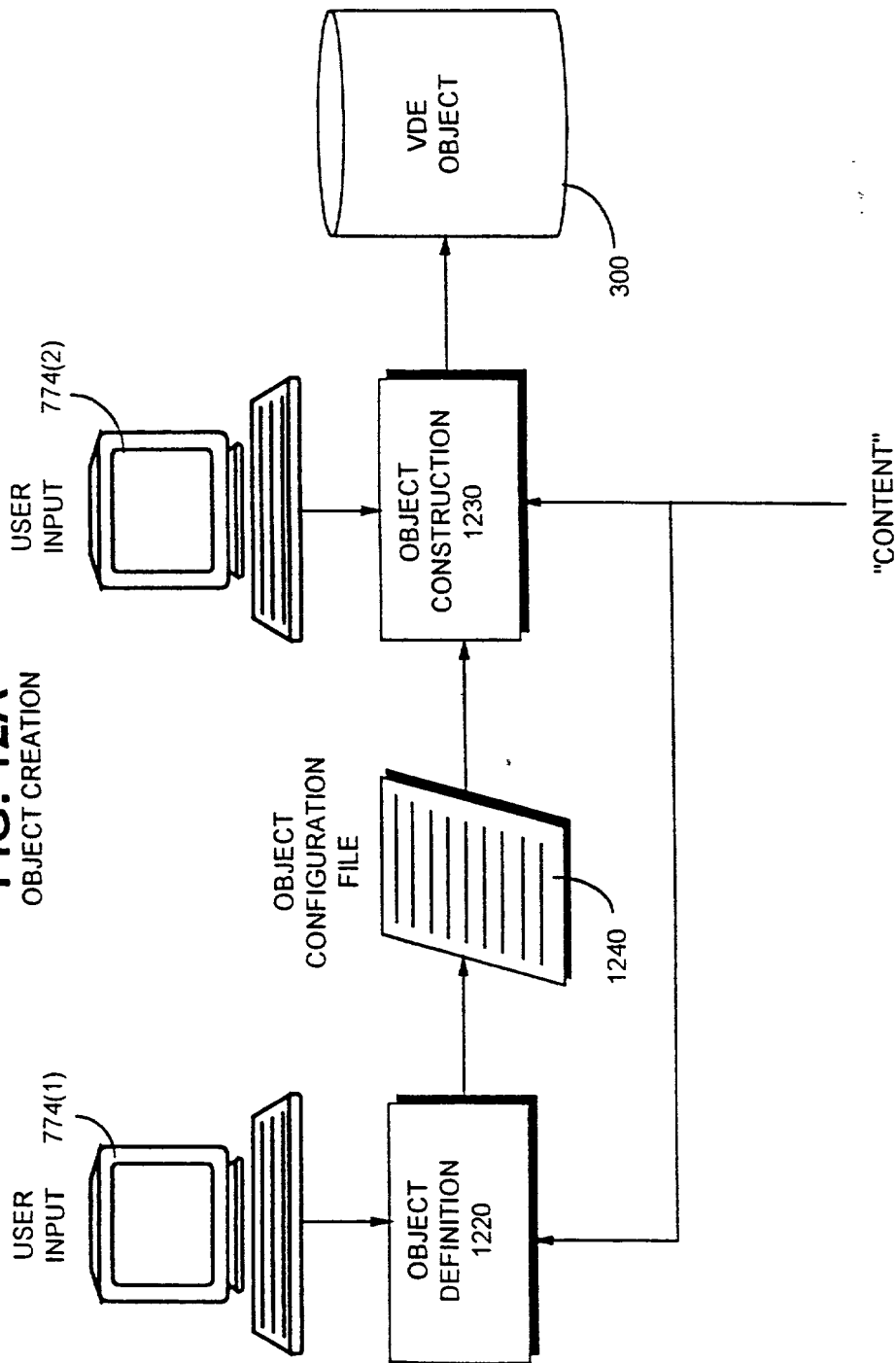
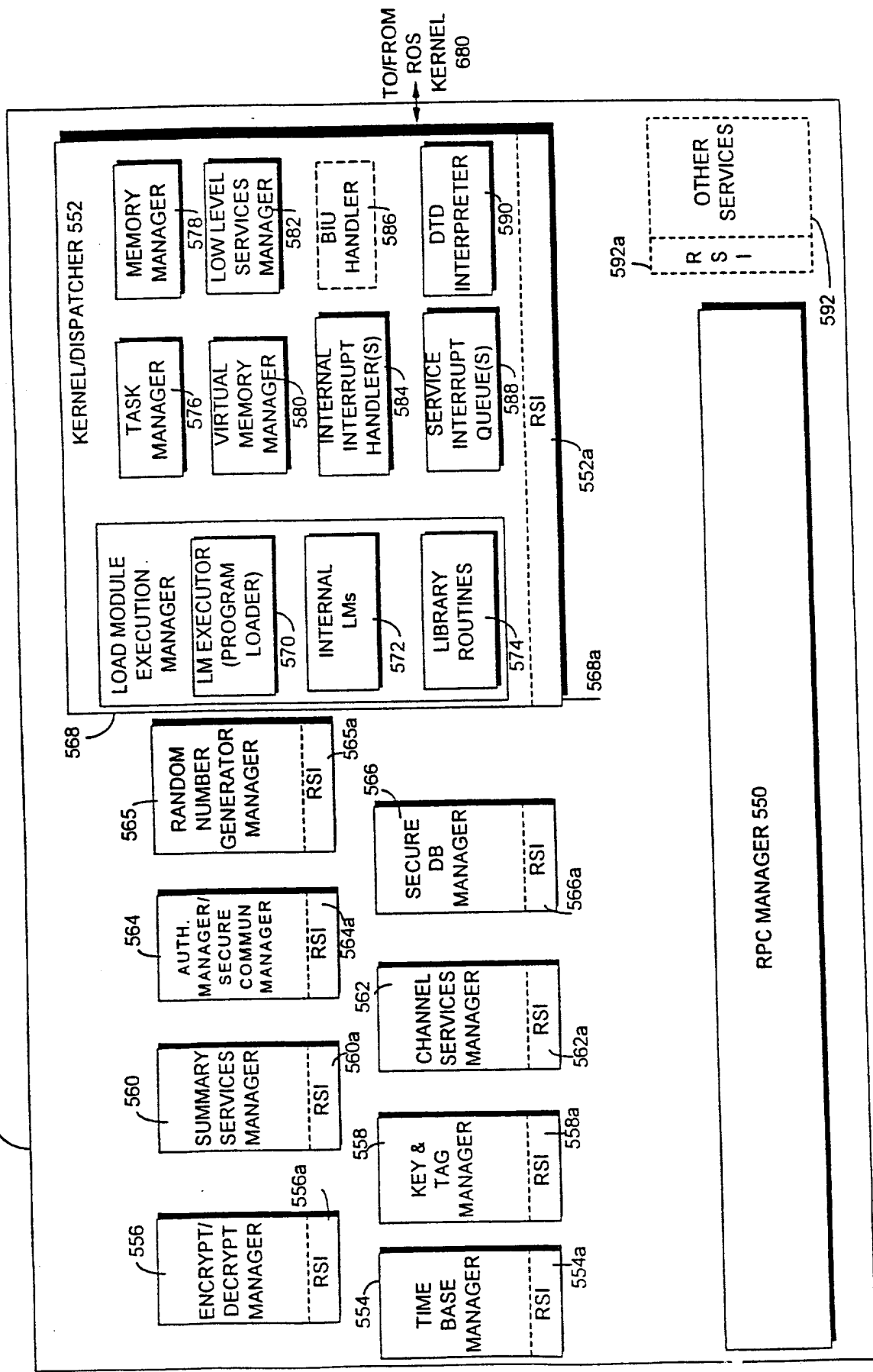


FIG. 13

503, 655



**DEVICE FIRM WIRE LOW LEVEL SERVICES 582**

INITIALIZATION

POST

DOWNLOAD  
CHALLENGE/RESPONSE AND  
AUTHENTICATION

RECOVERY

EEPROM/FLASH MEMORY  
MANAGER**KERNEL/DISPATCHER 552**

INITIALIZATION

TASK MANAGER 576  
(SLEEP/AWAKE/CONTEXT SWAP)INTERRUPT HANDLER 584  
(TIMER/BIU/POWER FAIL/WATCHDOG  
TIMER/ENCRYPTION COMPLETED)

BIU HANDLER 586

**MEMORY MANAGER 578**INITIALIZATION (SETTING MMU  
TABLES)

ALLOCATE

DEALLOCATE

**VIRTUAL MEMORY MANAGER 580**

SWAP BLOCK PAGING

EXTERNAL MODULE PAGING

MEMORY COMPRESS

**RPC AND TABLES 550**

INITIALIZATION

MESSAGING CODE /SERVICES  
MANAGER

SEND/RECEIVE

STATUS

RPC DISPATCH TABLE

RPC SERVICE TABLE

⋮

**FIG. 14A****TIME BASE MANAGER 554****ENCRYPTION/DECRYPTION MANAGER 556**

PK

BULK

**KEY AND TAG MANAGER 558**

KEY STORAGE IN EEPROM

KEY LOCATOR

KEY GENERATOR

CONVOLUTION ALGORITHM

**SUMMARY SERVICES MANAGER 560**

EVENT SUMMARIES

BUDGET SUMMARIES

DISTRIBUTER SUMMARY SERVICES

**CHANNEL SERVICES MANAGER 562**

CHANNEL HEADERS

CHANNEL DETAILS

**LOAD MODULE EXECUTION SERVICES 568****AUTHENTICATION MANAGER/SECURE  
COMMUNICATION MANAGER 564****DATABASE MANAGER 566**

MANAGEMENT FILE SUPPORT

TRANSACTION AND  
SEQUENCE NUMBER SUPPORT

SRN/ HASH

DTD INTERPRETER 590

LIBRARY ROUTINES 574

100 CALLS (STRING SEARCH ETC.)

MISC. ITEMS THAT ARE PROBABLY  
LIBRARY ROUTINES

TAG CHECKING, MD5, CRC'S

INTERNAL LM'S 572 FOR BASIC  
METHODS

METER LOAD MODULE(S)

BILLING LOAD MODULE(S)

BUDGET LOAD MODULE(S)

AUDIT LOAD MODULE(S)

READ OBJECT LOAD MODULE(S)

WRITE OBJECT LOAD MODULE(S)

OPEN OBJECT LOAD MODULE(S)

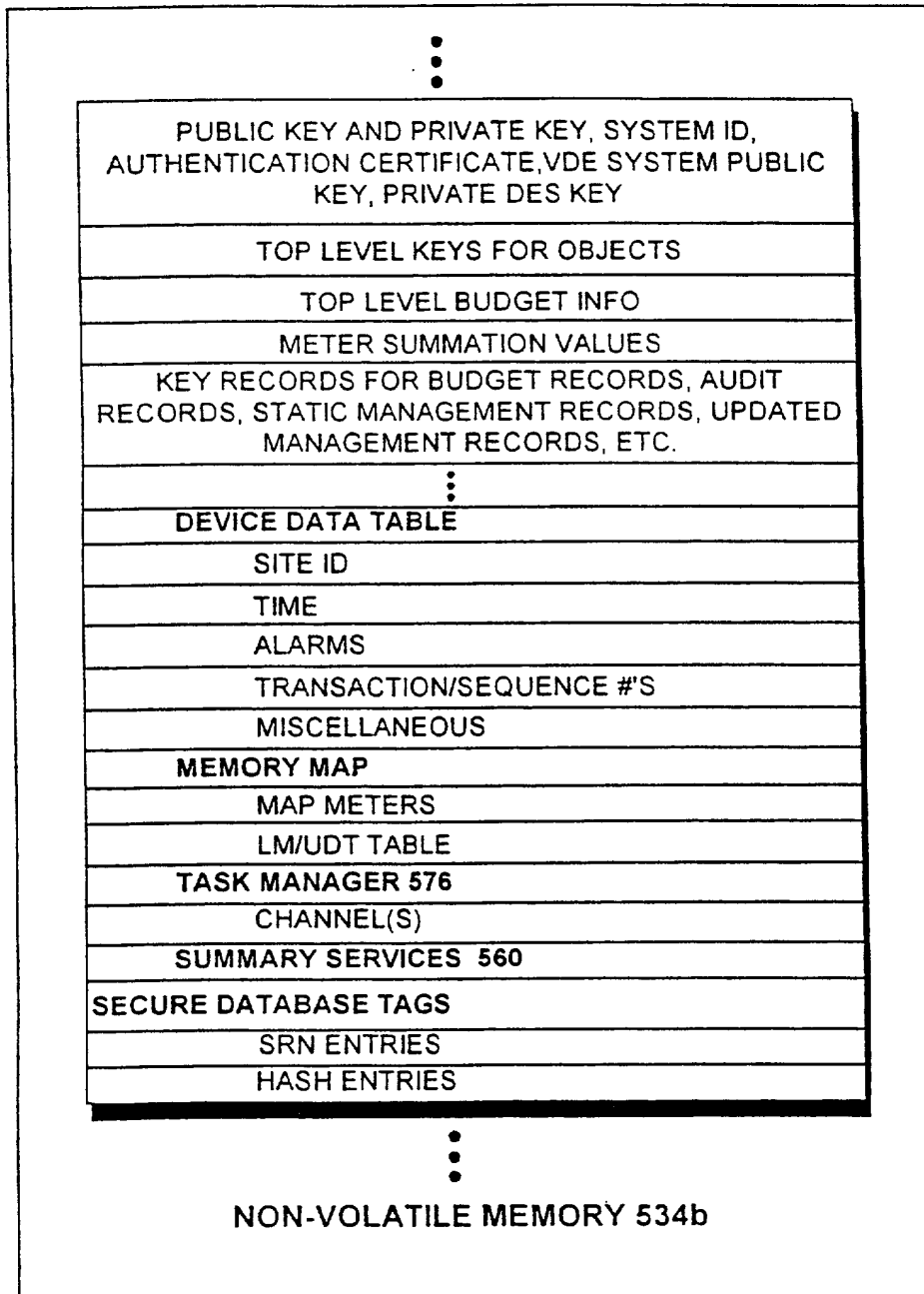
CLOSE OBJECT LOAD MODULE(S)

⋮

SPU ROM/EEPROM/FLASH 532

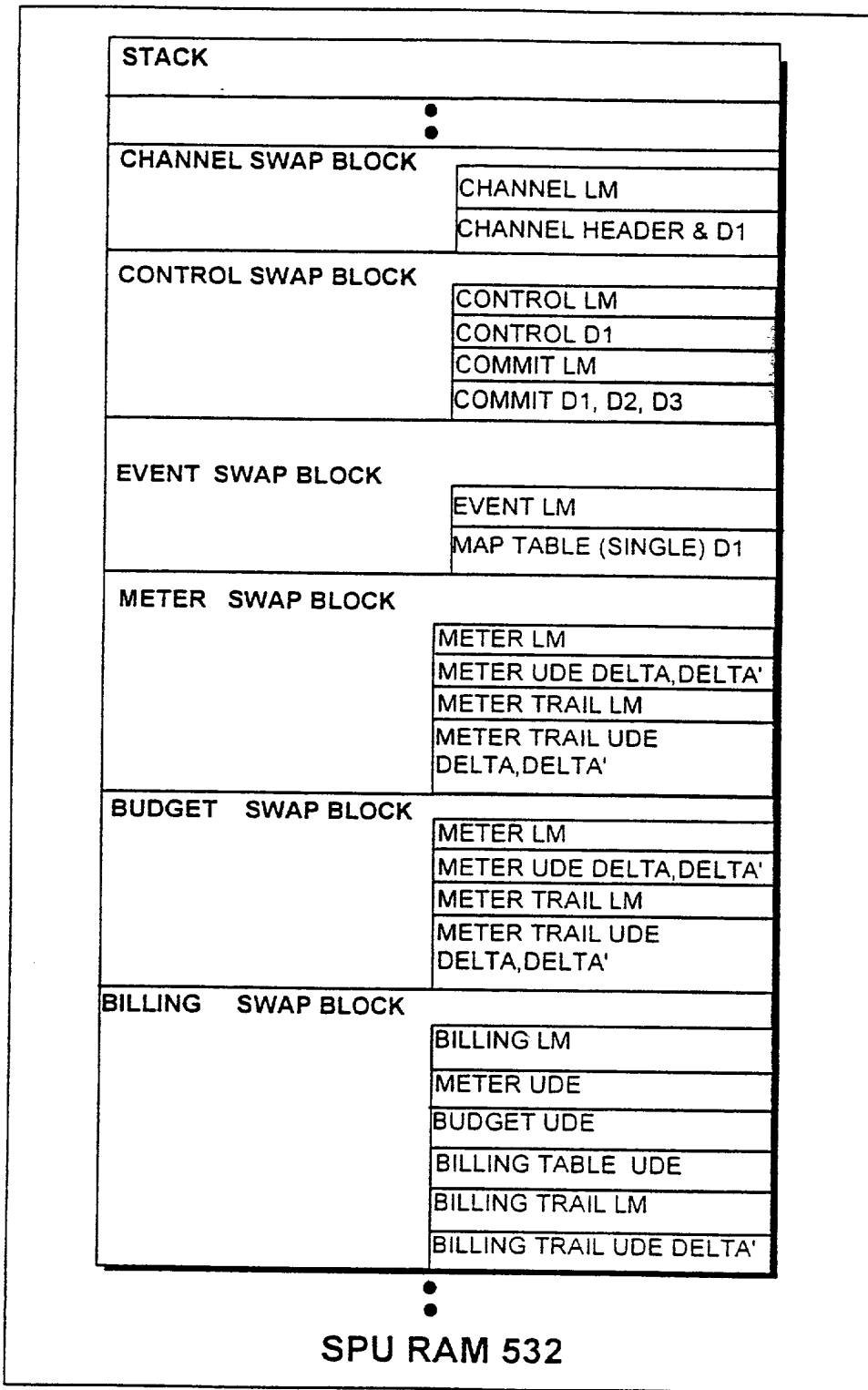


FIG. 14B



10027986 122101

FIG. 14C



1007996 122101

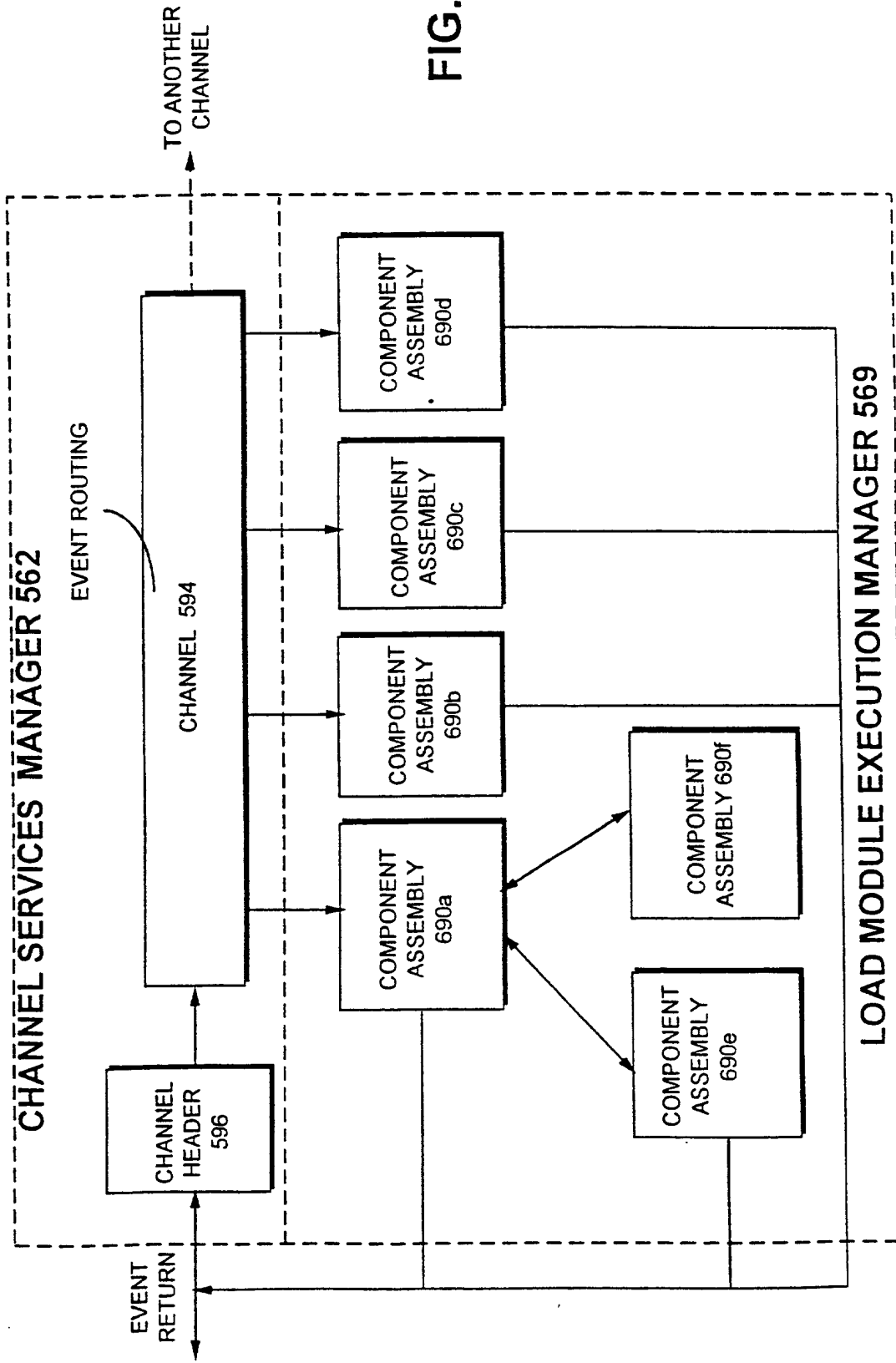


FIG. 15

FIG. 15A

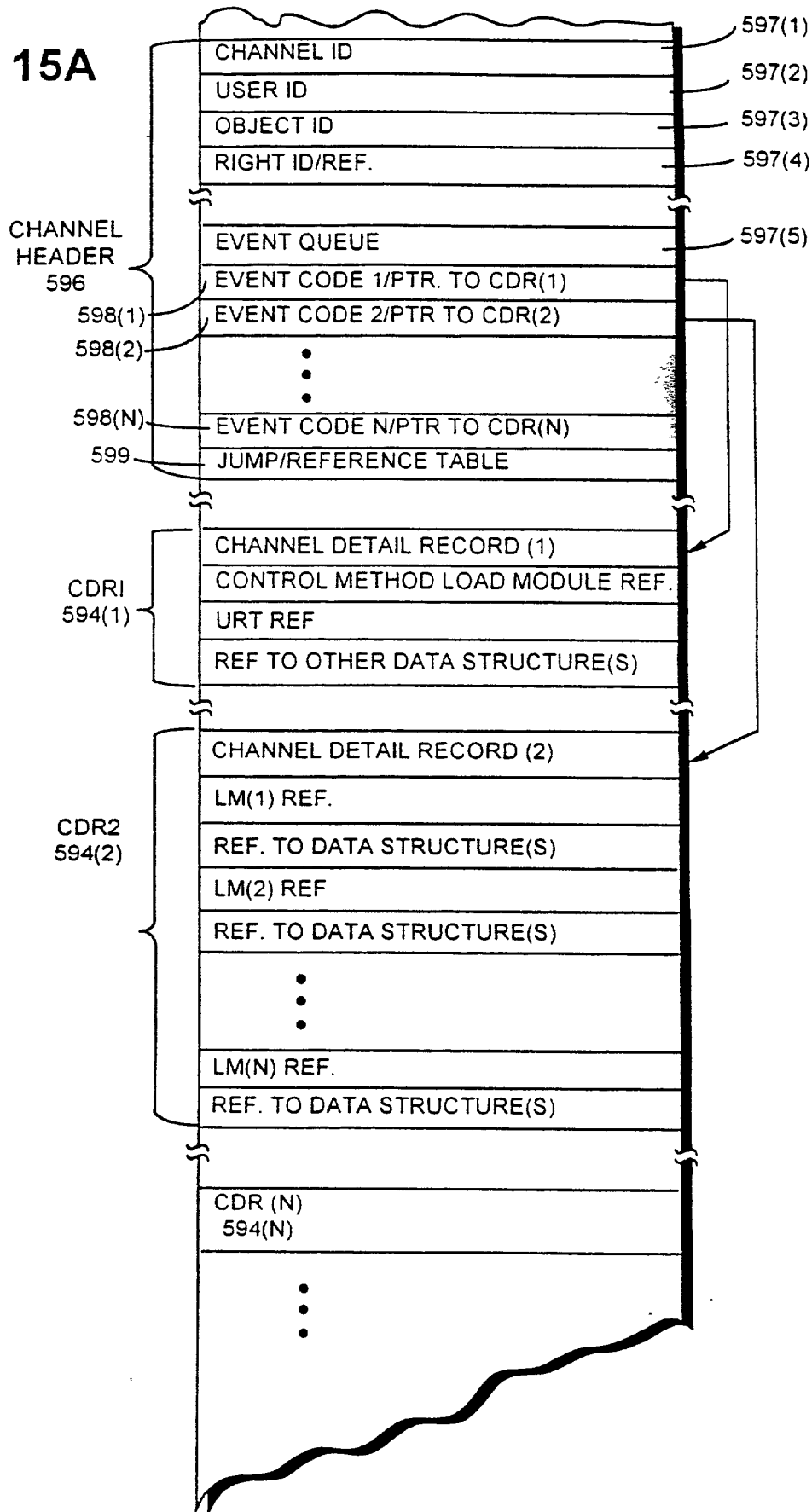
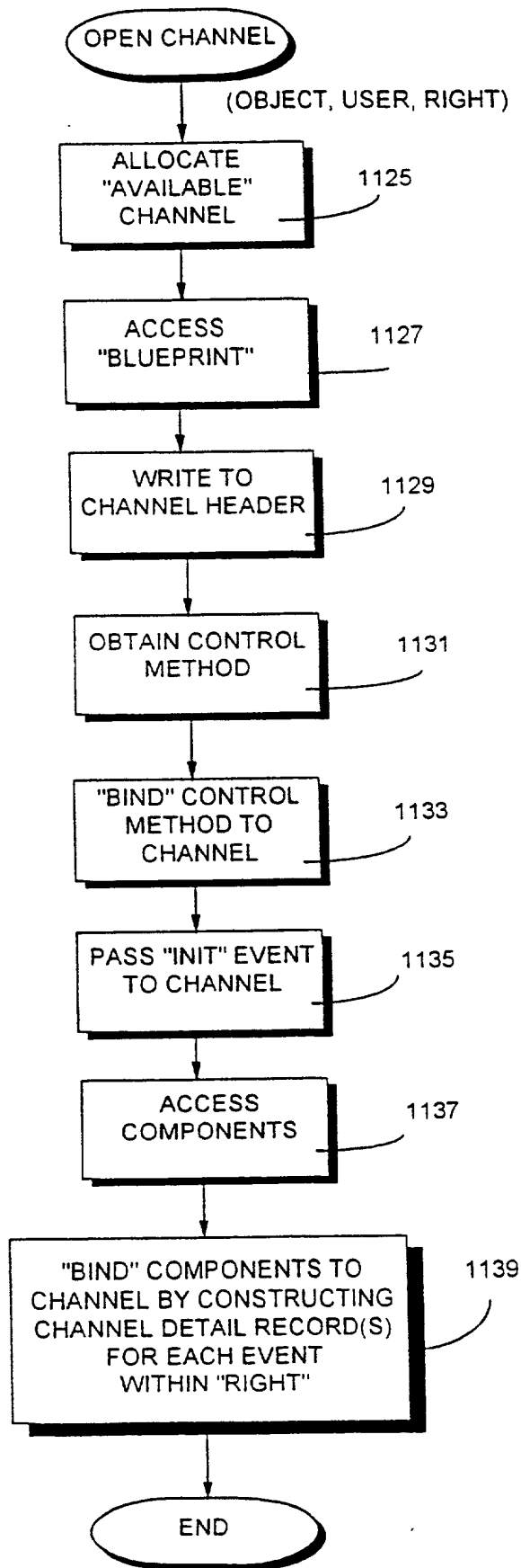


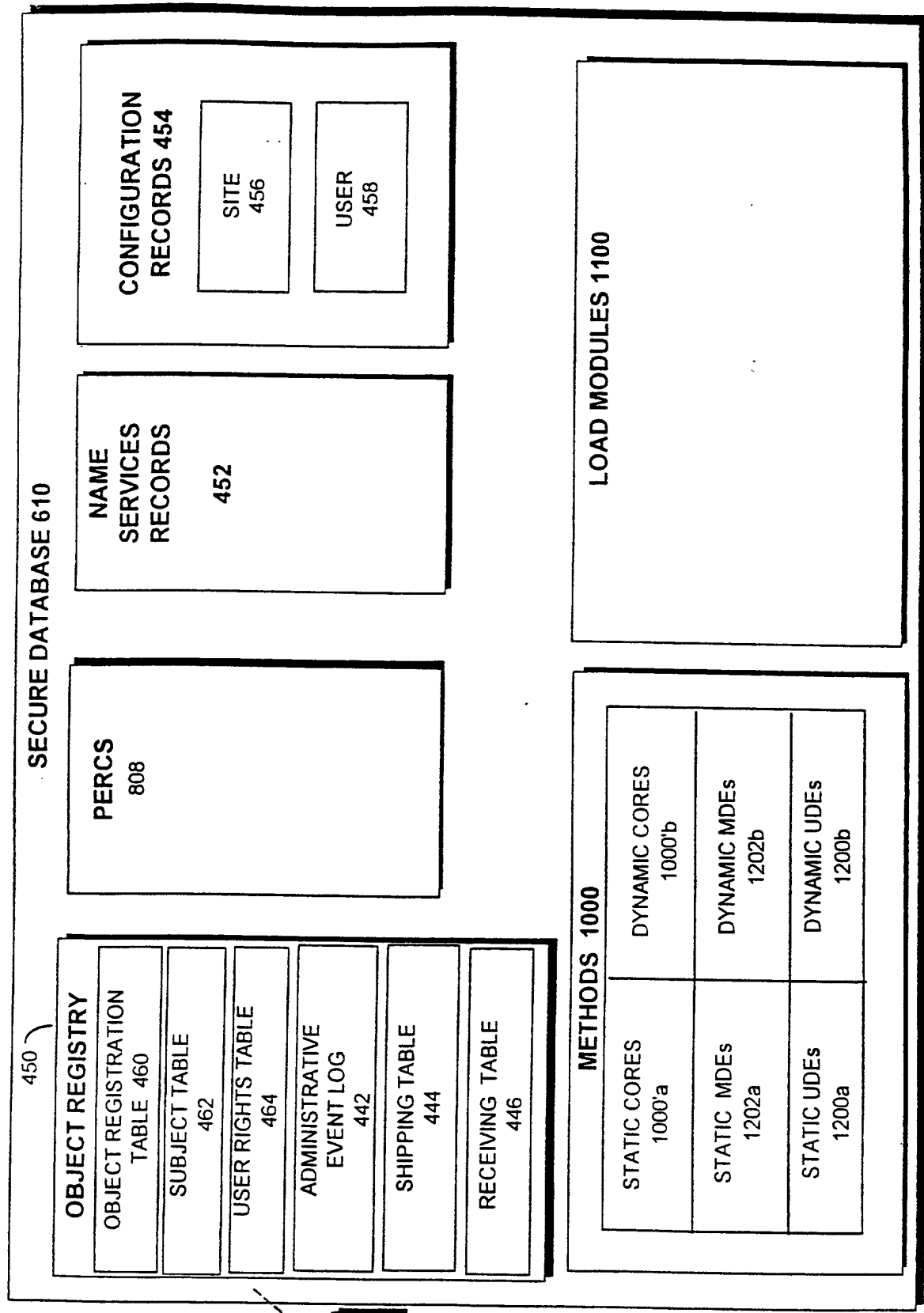
FIG. 15B

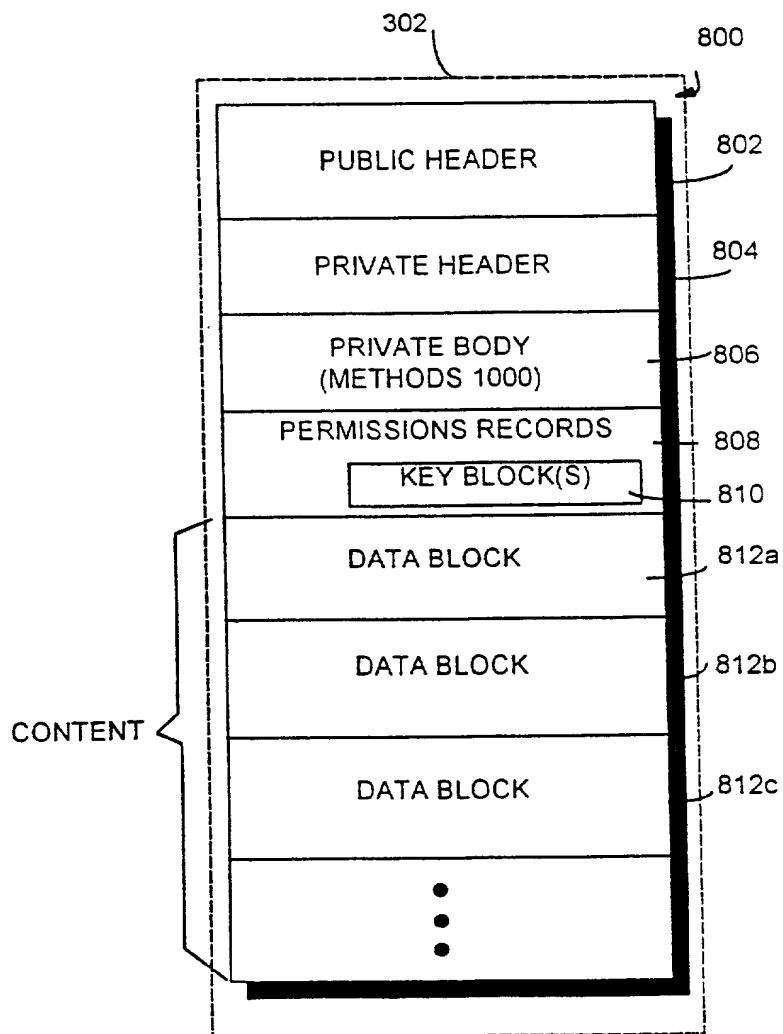


10027986 122101  
TOTAL 986/2001

FIG. 16

101221 9862001

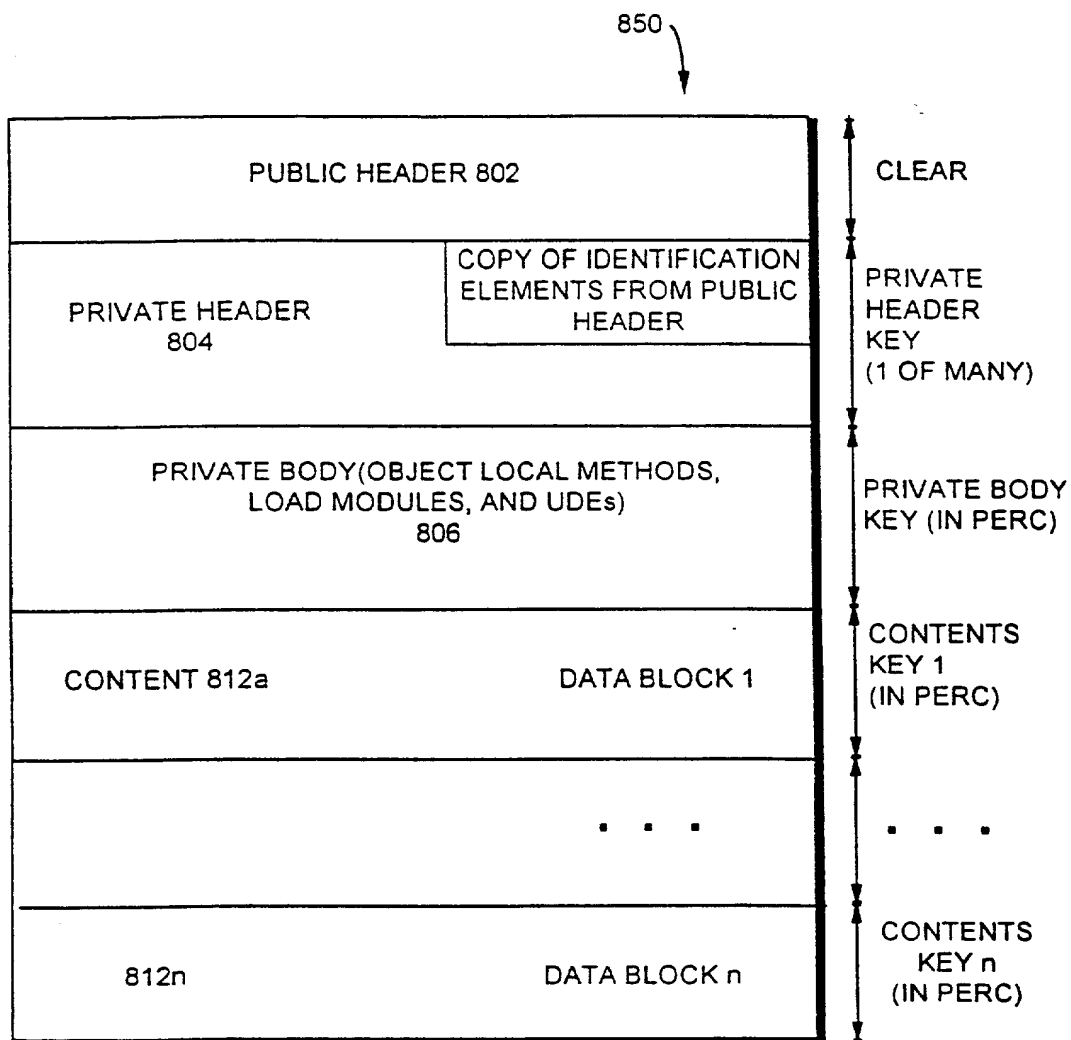




LOGICAL OBJECT

FIG. 17

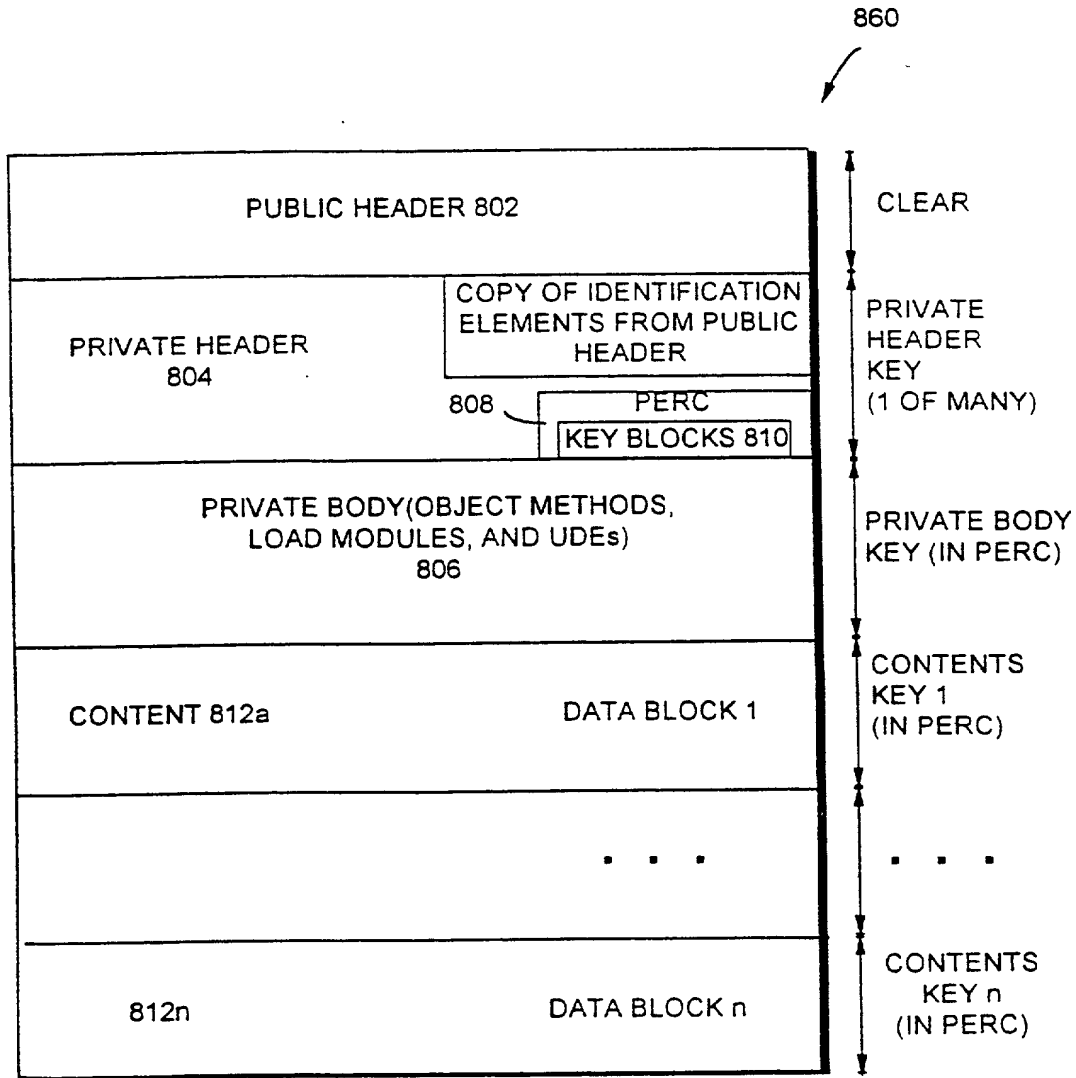
10027986-122104



STATIONARY OBJECT

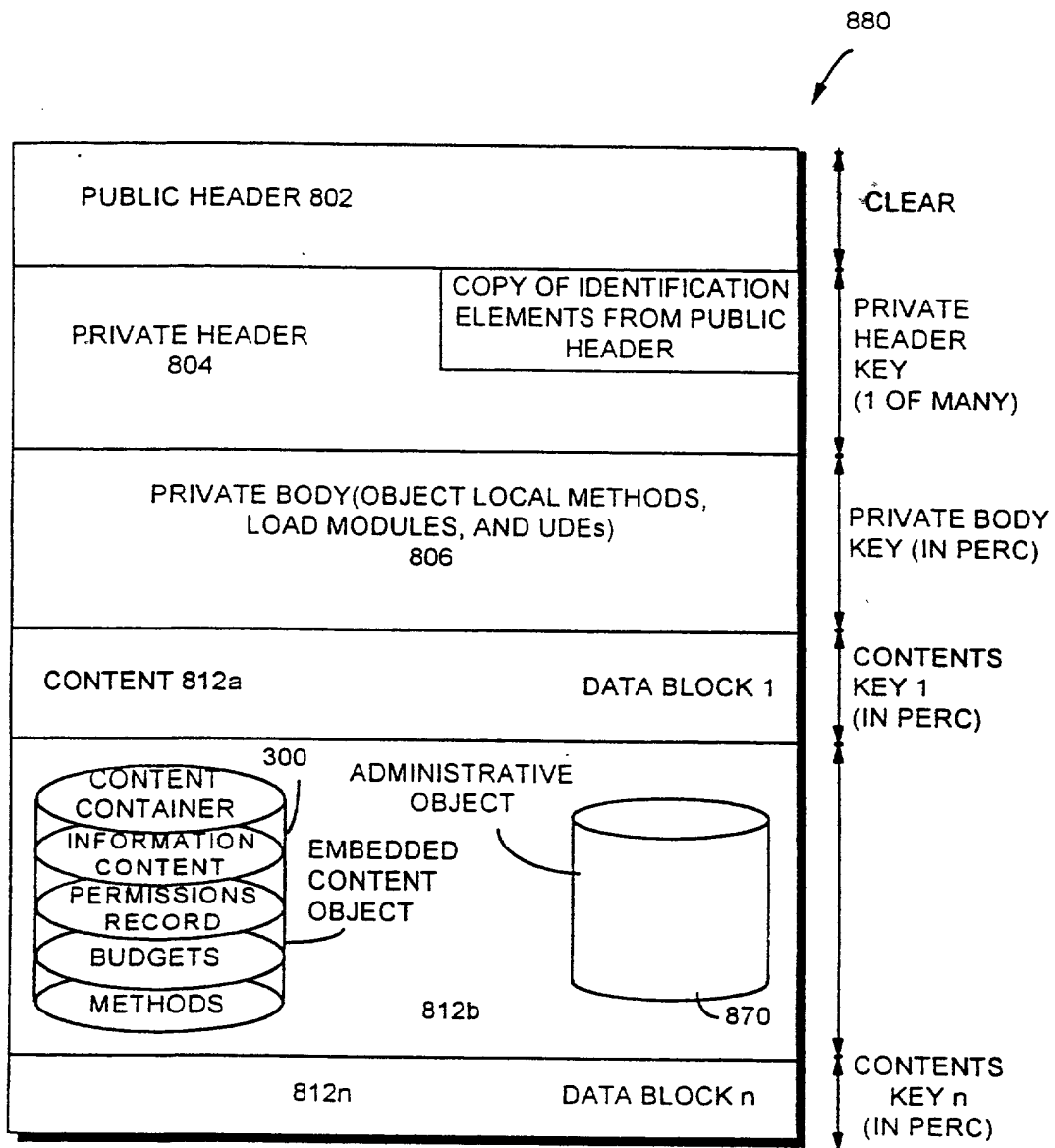
FIG. 18





TRAVELING OBJECT

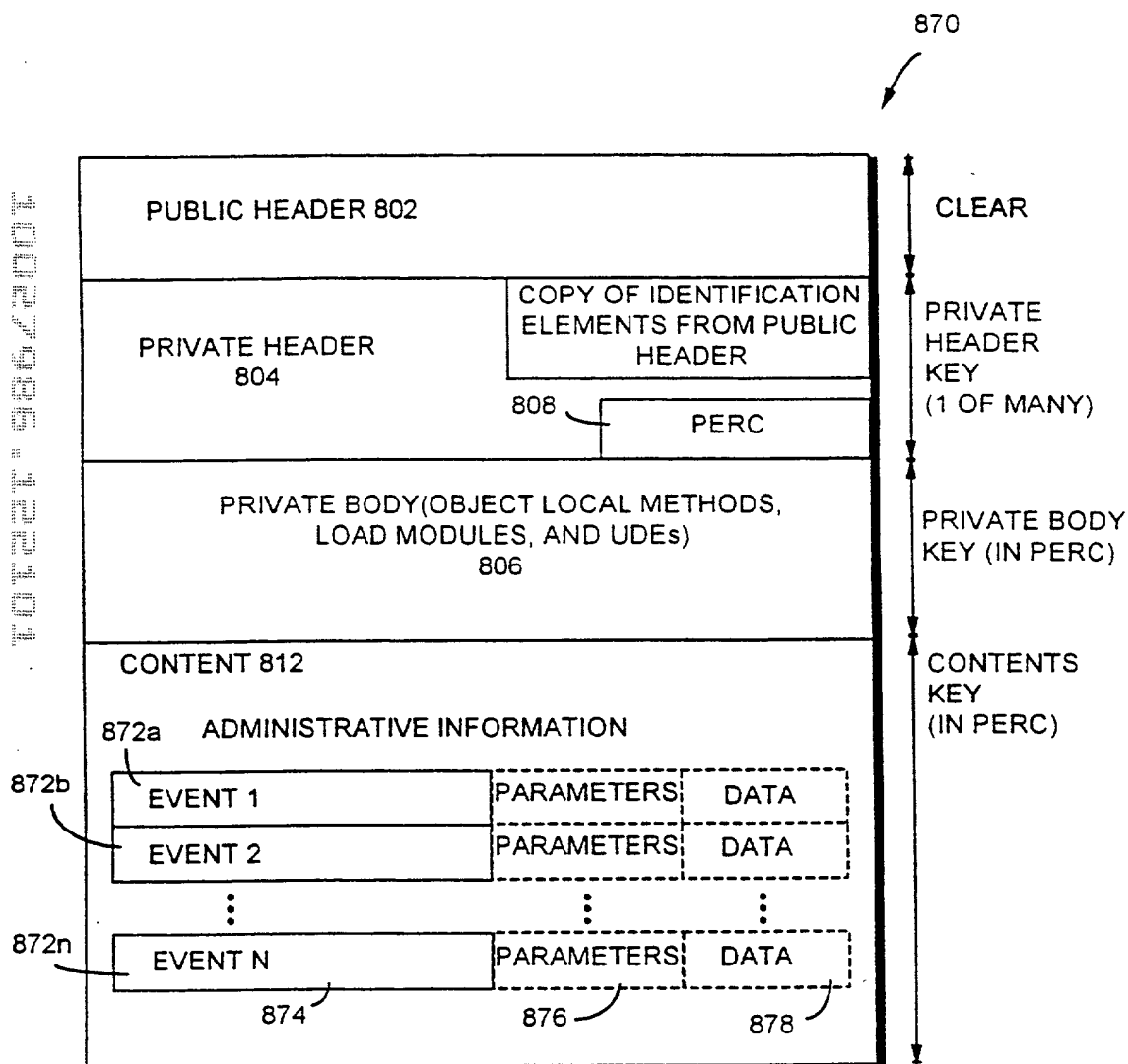
FIG. 19



CONTENT OBJECT

FIG. 20

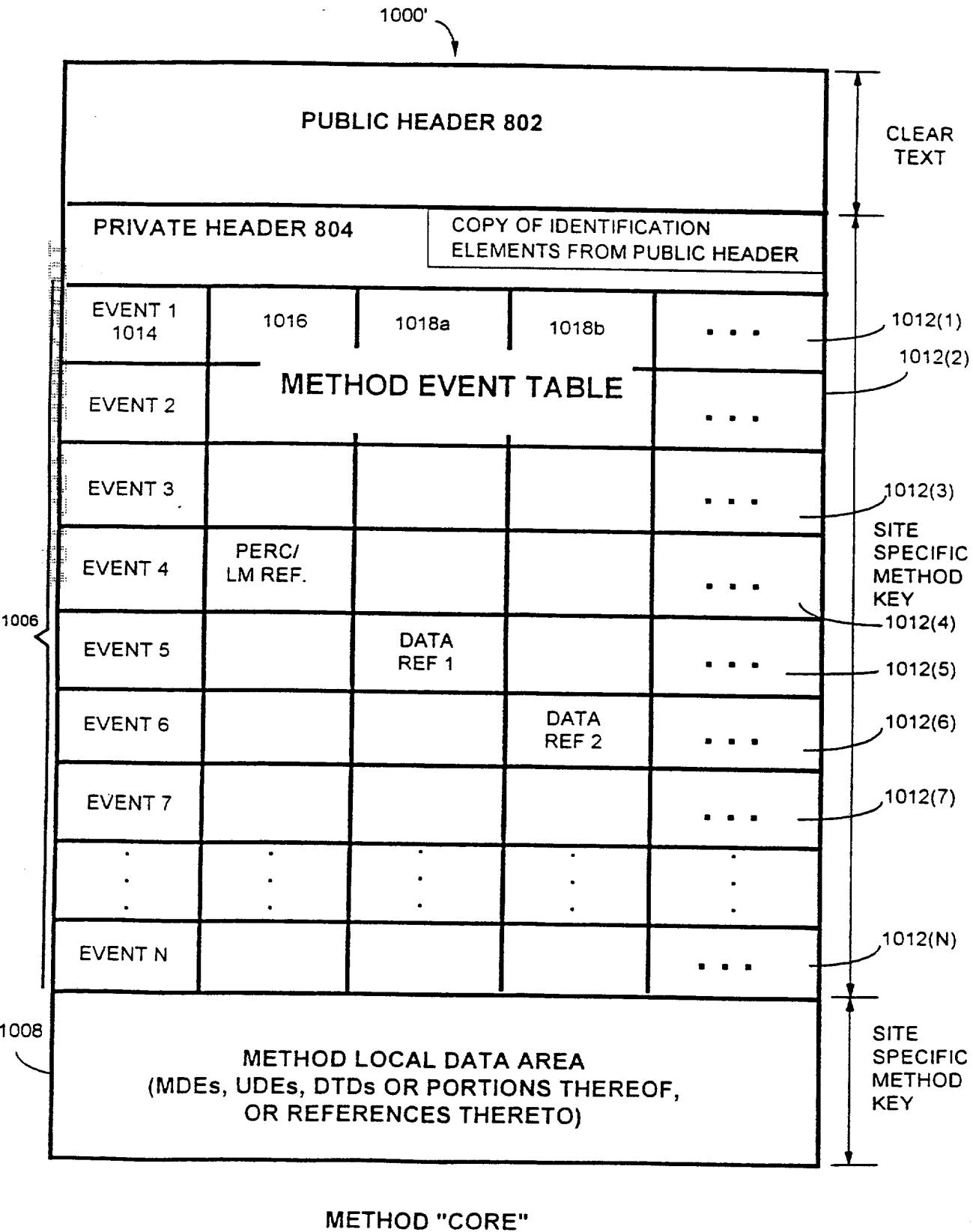
10027986 122101



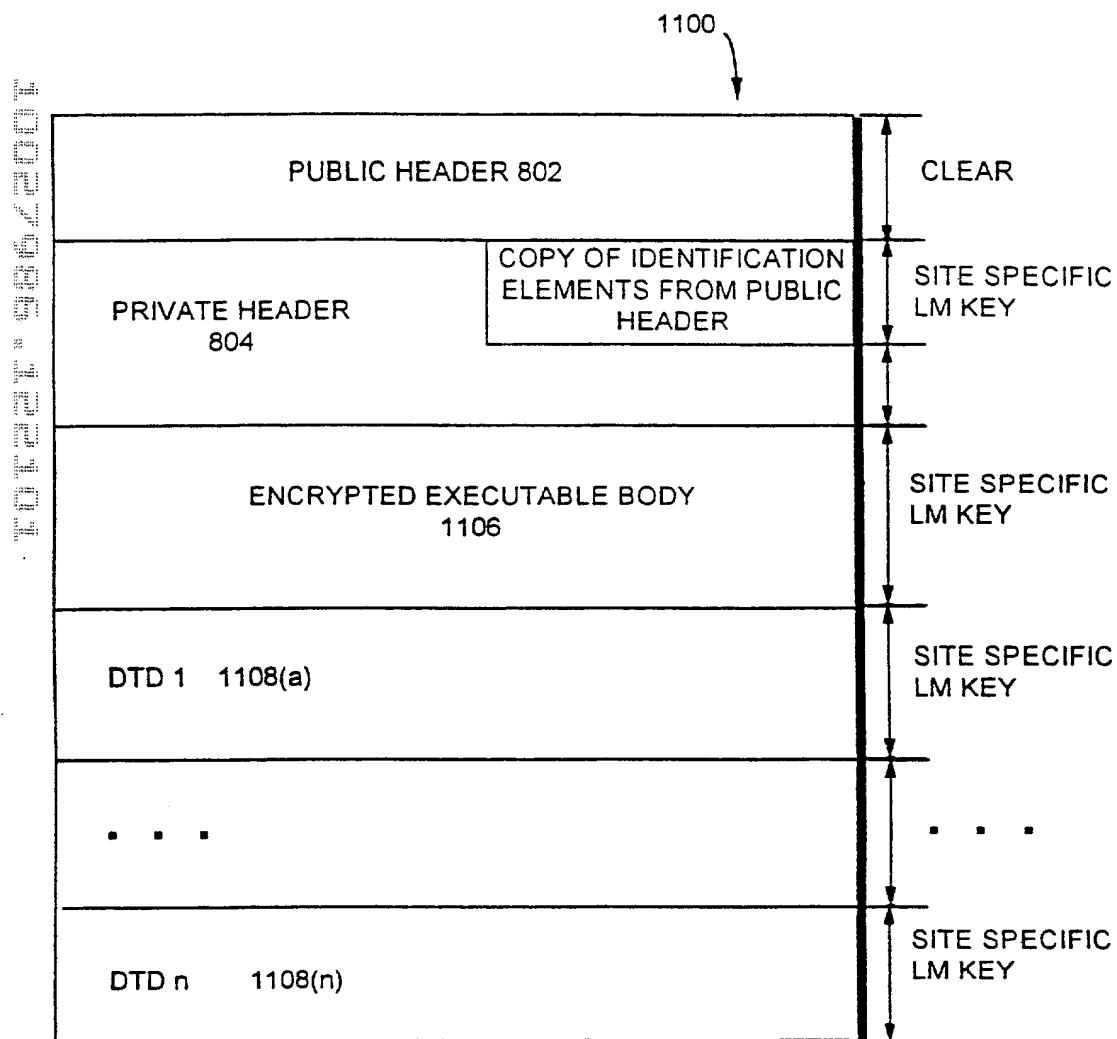
ADMINISTRATIVE OBJECT

FIG. 21

# FIG. 22

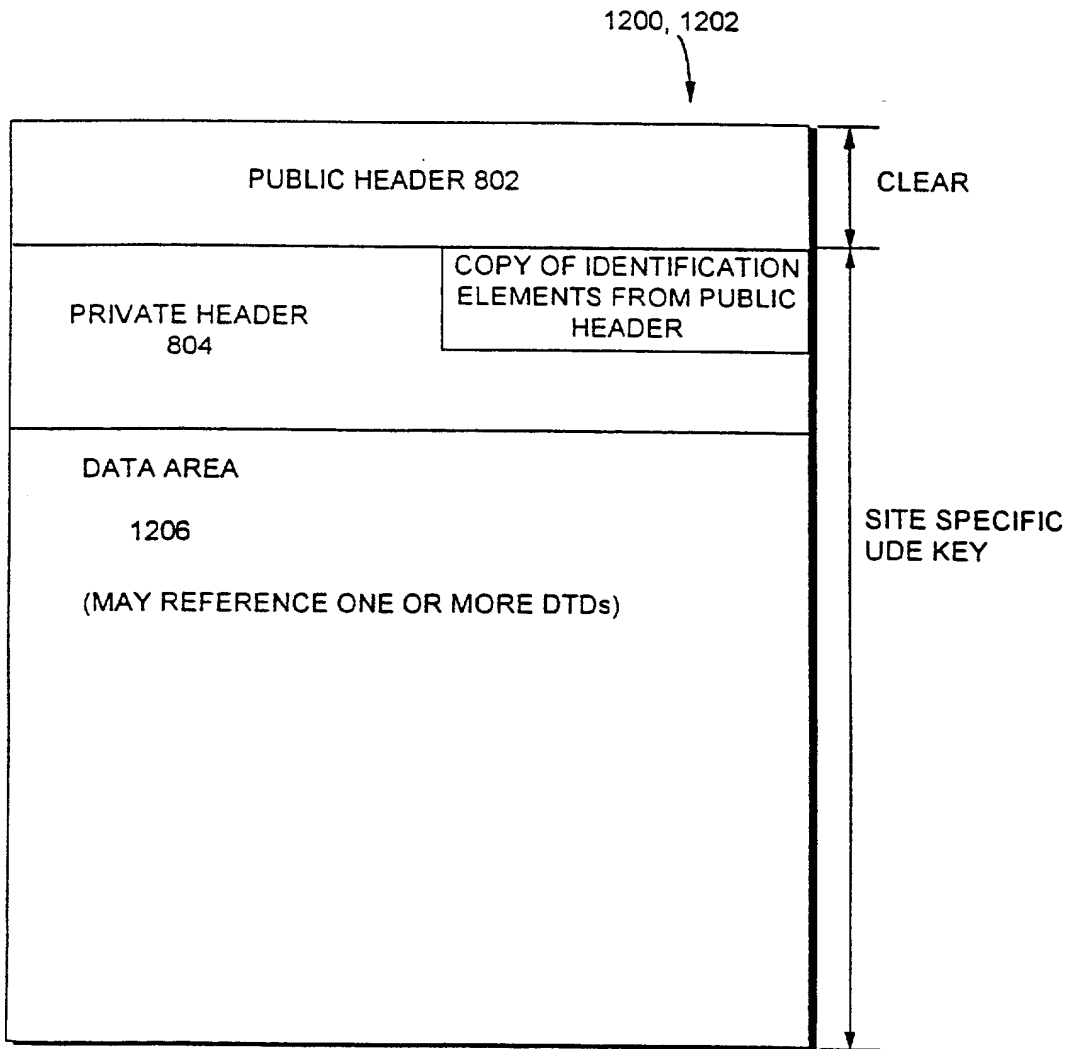


# FIG. 23



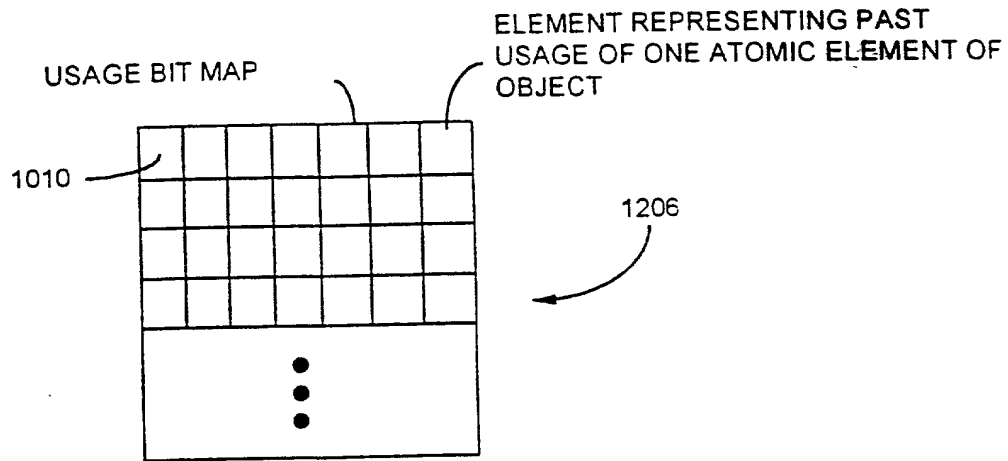
LOAD MODULE

FIG. 24



UDE (MDE)

# FIG. 25A



# FIG. 25B

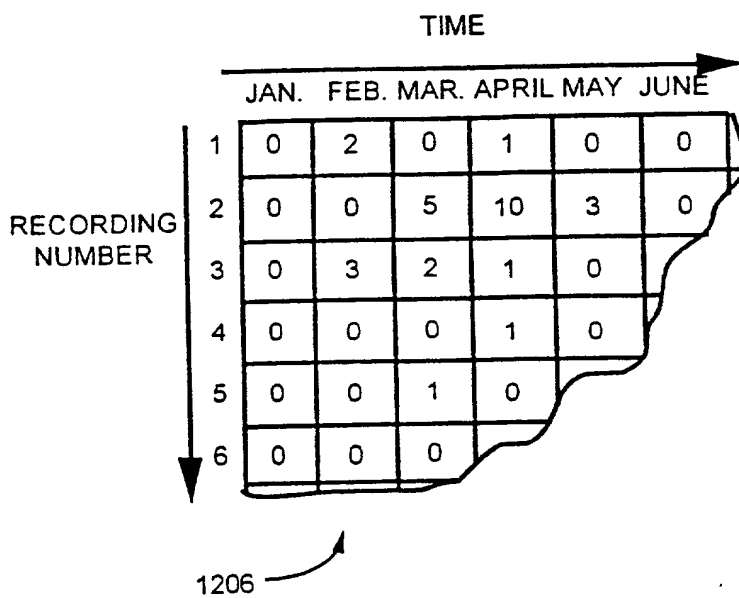
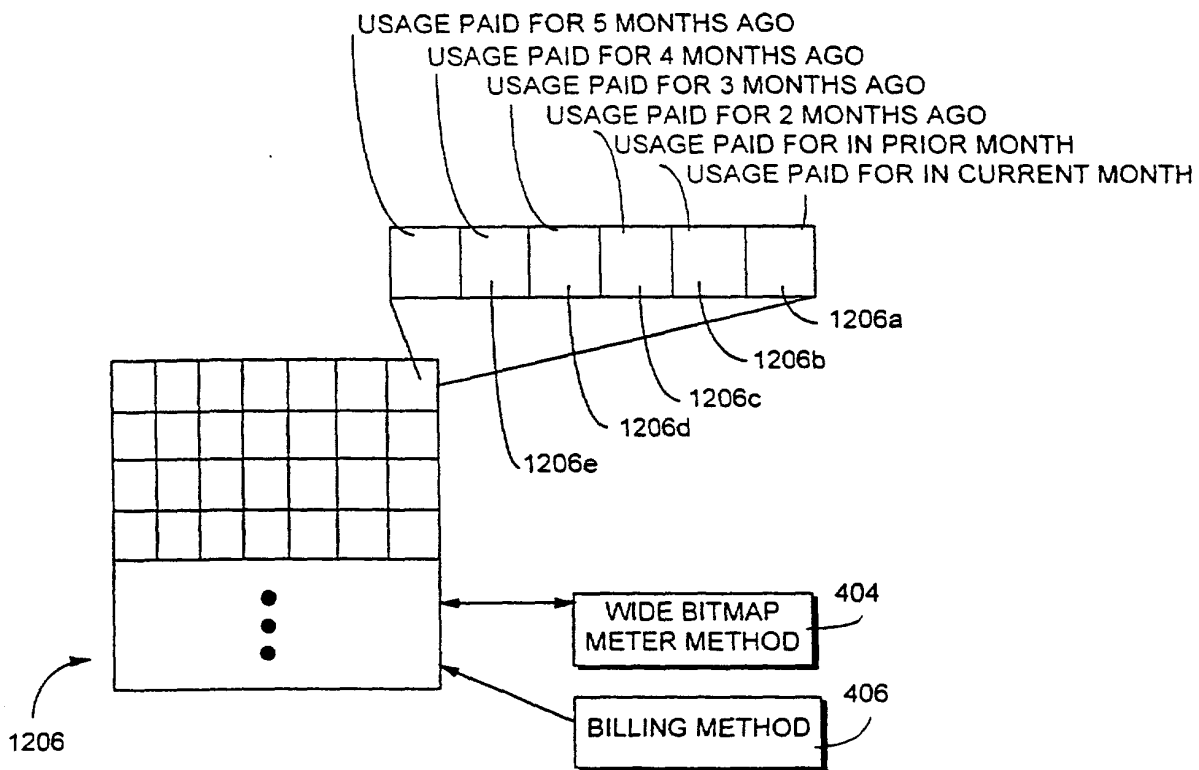
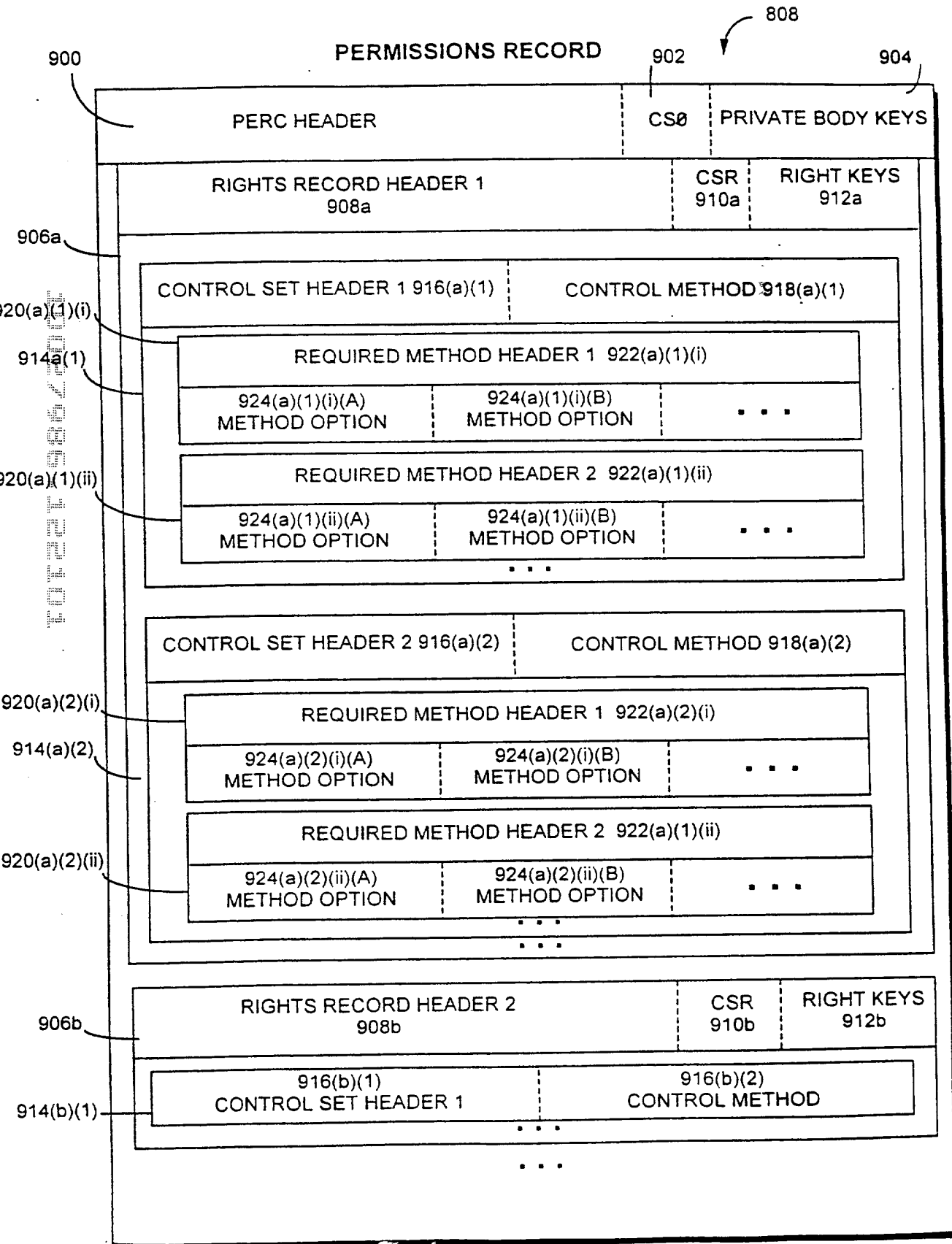


FIG. 25C





# FIG. 26



# FIG. 26A

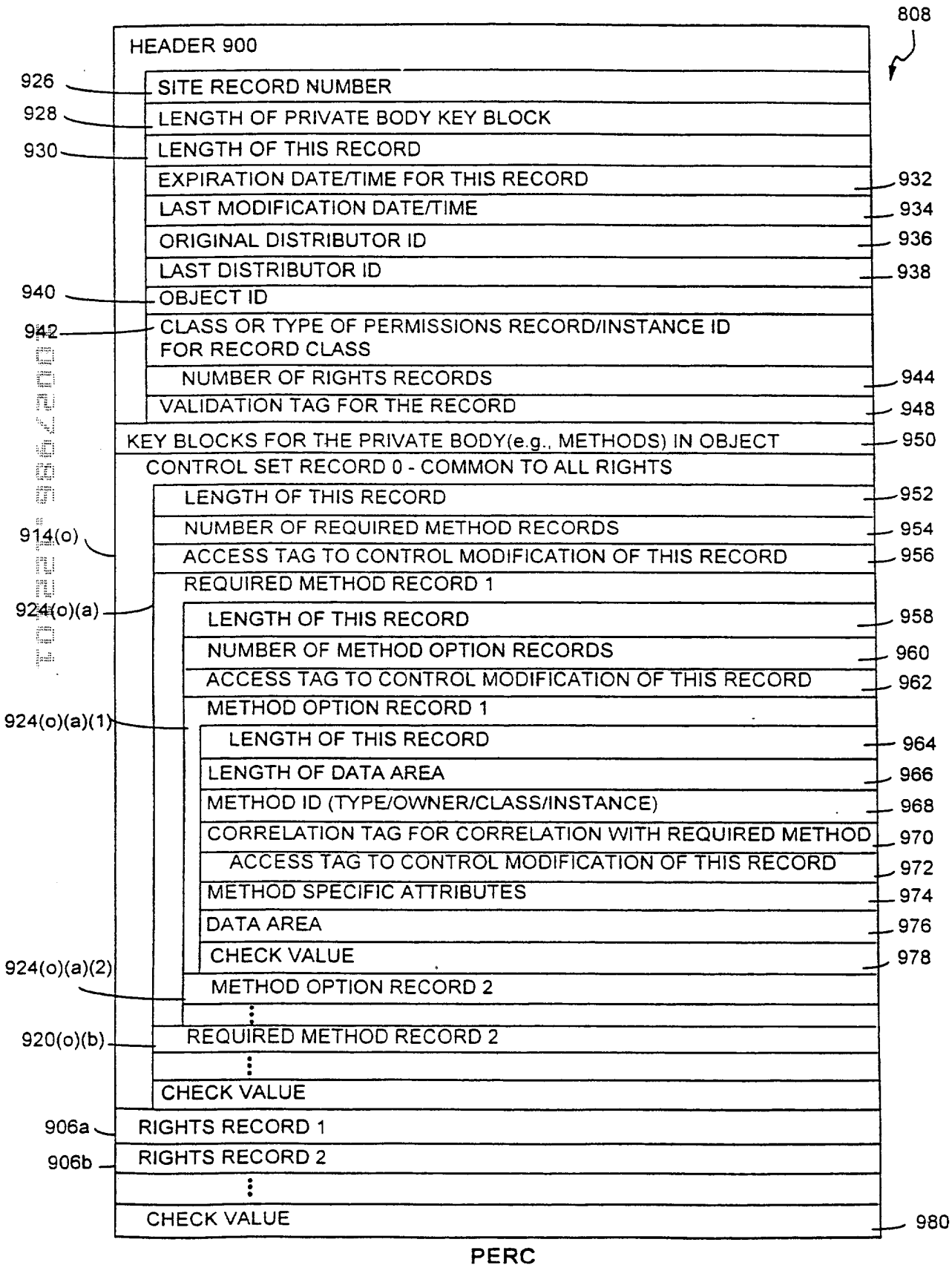
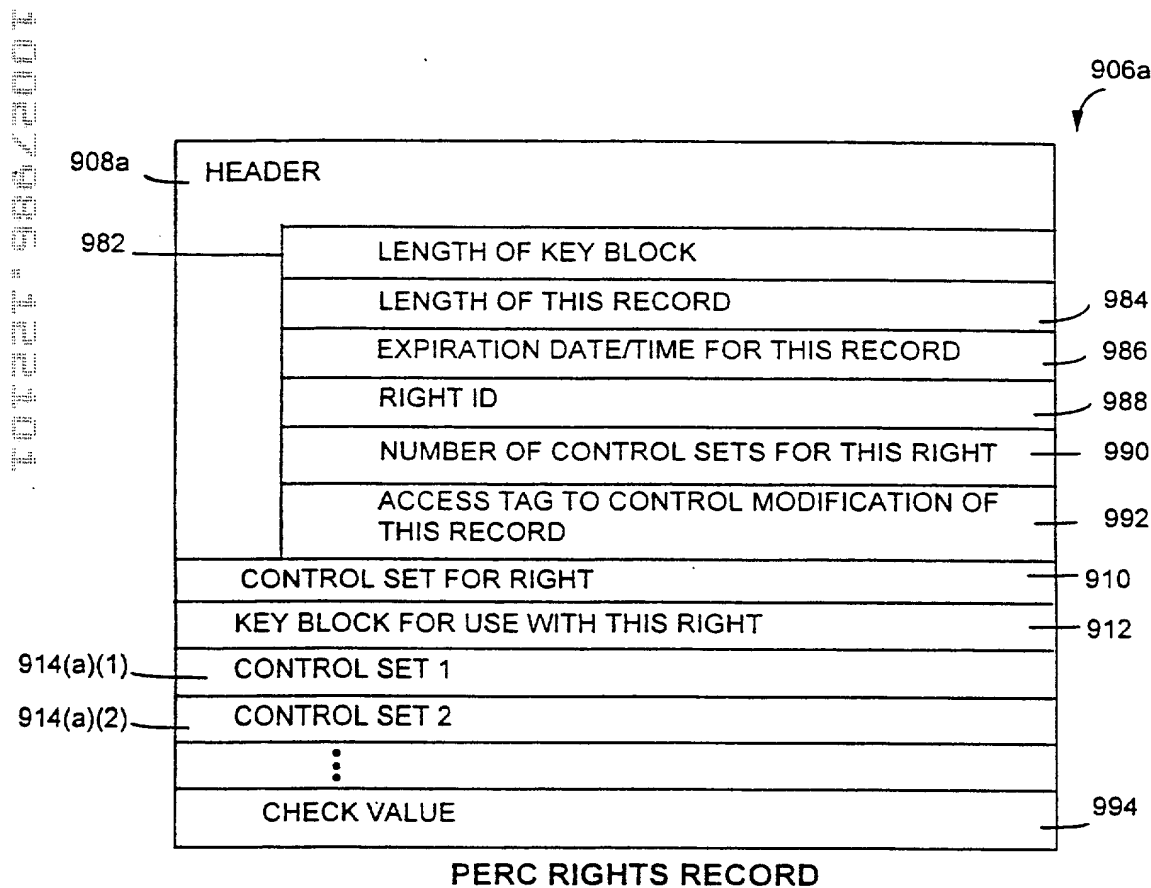


FIG. 26B



**FIG. 27**  
SHIPPING TABLE

		444A(1)	
HEADER 444A	SITE RECORD NUMBER		444
	USER (GROUP) ID		444A(2)
	REF. TO "FIRST" COMPLETED OUTGOING SHIPPING RECORD		444A(3)
	REF. TO "LAST" COMPLETED OUTGOING SHIPPING RECORD		444A(4)
	REF. TO "FIRST" SCHEDULED OUTGOING SHIPPING RECORD		444A(5)
	REF. TO "LAST" SCHEDULED OUTGOING SHIPPING RECORD		444A(6)
	VALIDATION TAG FROM NAME SERVICES RECORD		444A(7)
	VALIDATION TAG FOR "FIRST" OUTGOING SHIPPING RECORD(S)		444A(8)
	CHECK VALUE		444A(9)
SHIPPING RECORD 445(1)	SITE RECORD NUMBER		445(1)(A)
	FIRST DATE/TIME FOR SCHEDULED SHIPMENT		445(1)(B)
	LAST DATE/TIME FOR SCHEDULED SHIPMENT		445(1)(C)
	ACTUAL DATE/TIME OF COMPLETED SHIPMENT		445(1)(D)
	OBJECT ID OF ADMINISTRATIVE OBJECT (TO BE) SHIPPED		445(1)(E)
	REF. TO ENTRY IN ADMINISTRATIVE EVENT LOG		445(1)(F)
	REF. TO NAME SERVICES RECORD NAMING RECIPIENT		445(1)(G)
	PURPOSE OF SHIPMENT		445(1)(H)
	STATUS OF SHIPMENT		445(1)(I)
	REF. TO "PREVIOUS" OUTGOING SHIPPING RECORD		445(1)(J)
	REF. TO "NEXT" OUTGOING SHIPPING RECORD		445(1)(K)
	VALIDATION TAG FROM HEADER		445(1)(L)
	VALIDATION TAG TO ADMINISTRATIVE EVENT LOG		445(1)(M)
	VALIDATION TAG TO NAME SERVICES RECORD		445(1)(N)
	VALIDATION TAG FROM PREVIOUS RECORD		445(1)(O)
	VALIDATION TAG TO NEXT RECORD		445(1)(P)
	CHECK VALUE		445(1)(Q)
	⋮		
	SHIPPING RECORD N		445(1)(R)

**FIG. 28**  
RECEIVING TABLE

		446A(1)	
HEADER 446A	SITE RECORD NUMBER		446
	USER (GROUP) ID		446A(2)
	REF. TO "FIRST" COMPLETED INCOMING RECEIVING RECORD		446A(3)
	REF. TO "LAST" COMPLETED INCOMING RECEIVING RECORD		446A(4)
	REF. TO "FIRST" SCHEDULED INCOMING RECEIVING RECORD		446A(5)
	REF. TO "LAST" SCHEDULED INCOMING RECEIVING RECORD		446A(6)
	VALIDATION TAG FROM NAME SERVICES RECORD		446A(7)
	VALIDATION TAG FOR "FIRST" INCOMING RECEIVING RECORD(S)		446A(8)
	CHECK VALUE		446A(9)
RECEIVING RECORD 447(1)	SITE RECORD NUMBER		447(1)(A)
	FIRST DATE/TIME FOR SCHEDULED RECEPTION		447(1)(B)
	LAST DATE/TIME FOR SCHEDULED RECEPTION		447(1)(C)
	ACTUAL DATE/TIME OF COMPLETED RECEPTION		447(1)(D)
	OBJECT ID OF ADMINISTRATIVE OBJECT (TO BE) RECEIVED		447(1)(E)
	REF. TO ENTRY IN ADMINISTRATIVE EVENT LOG		447(1)(F)
	REF. TO NAME SERVICES RECORD NAMING SENDER		447(1)(G)
	PURPOSE OF RECEPTION		447(1)(H)
	STATUS OF RECEPTION		447(1)(I)
	REF. TO "PREVIOUS" INCOMING RECEIVING RECORD		447(1)(J)
	REF. TO "NEXT" INCOMING RECEIVING RECORD		447(1)(K)
	VALIDATION TAGS		447(1)(L)
	CHECK VALUE		447(1)(M)
	⋮		
	RECEIVING RECORD N		447(2)

# FIG. 29

## ADMINISTRATIVE EVENT LOG

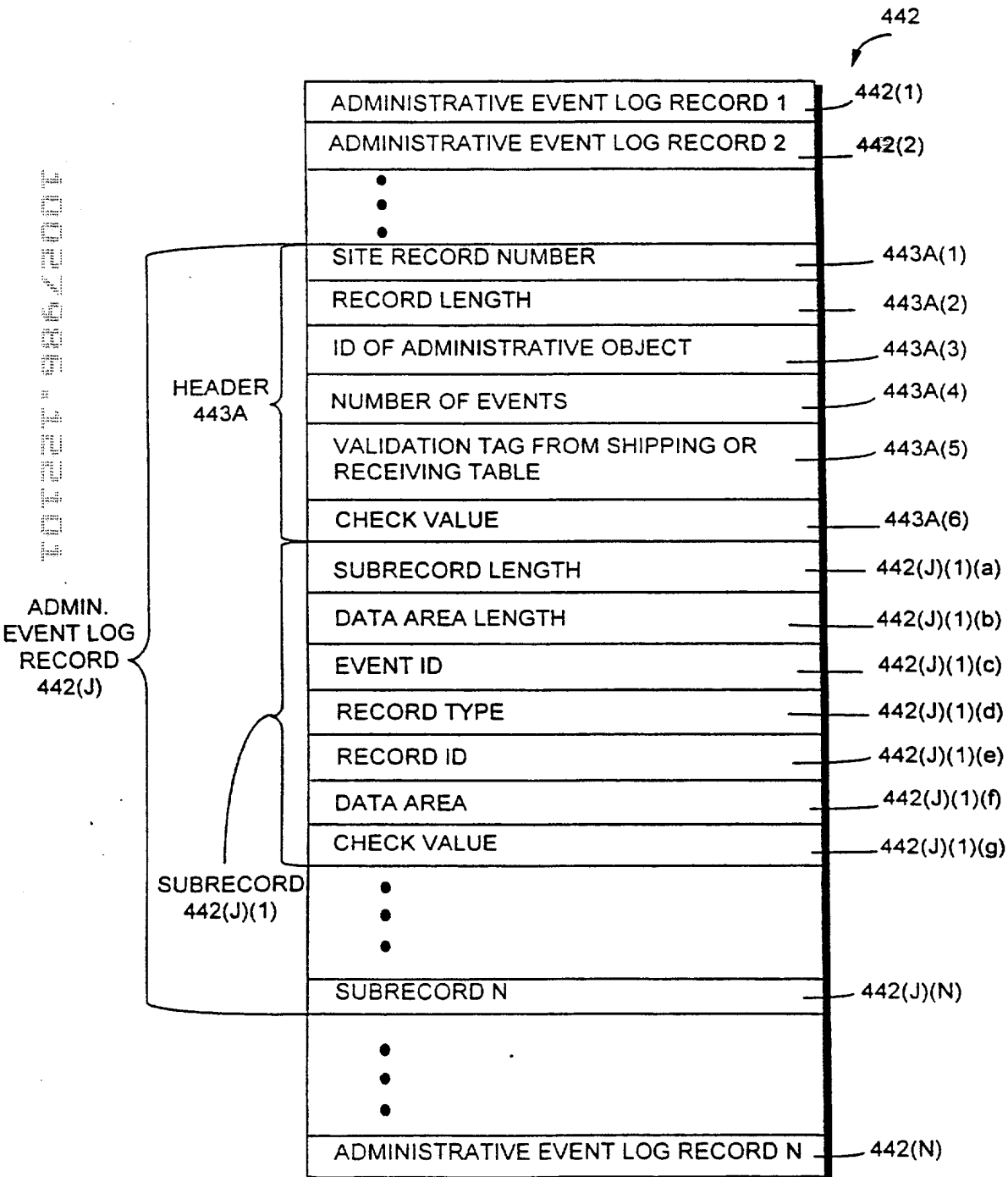
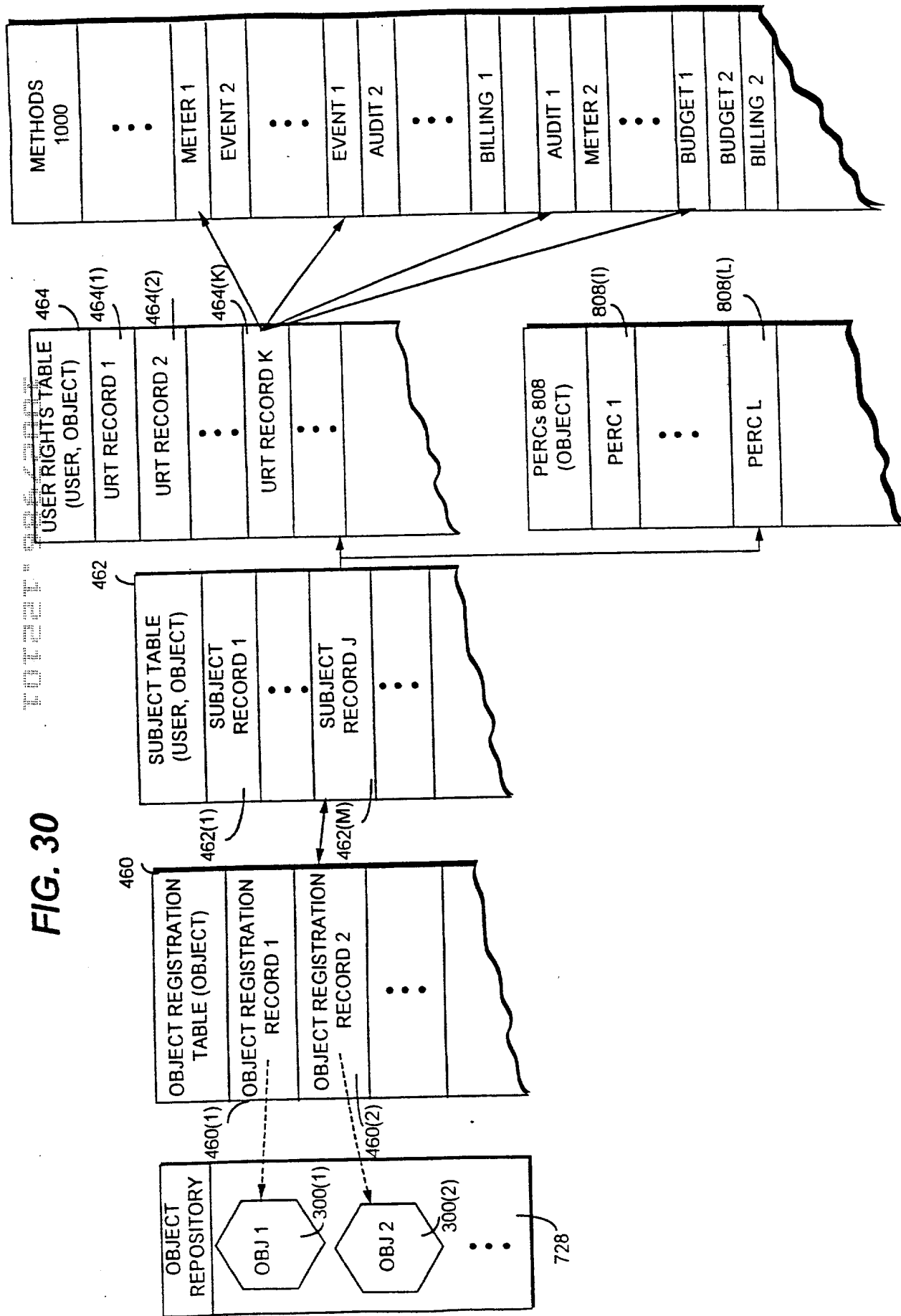
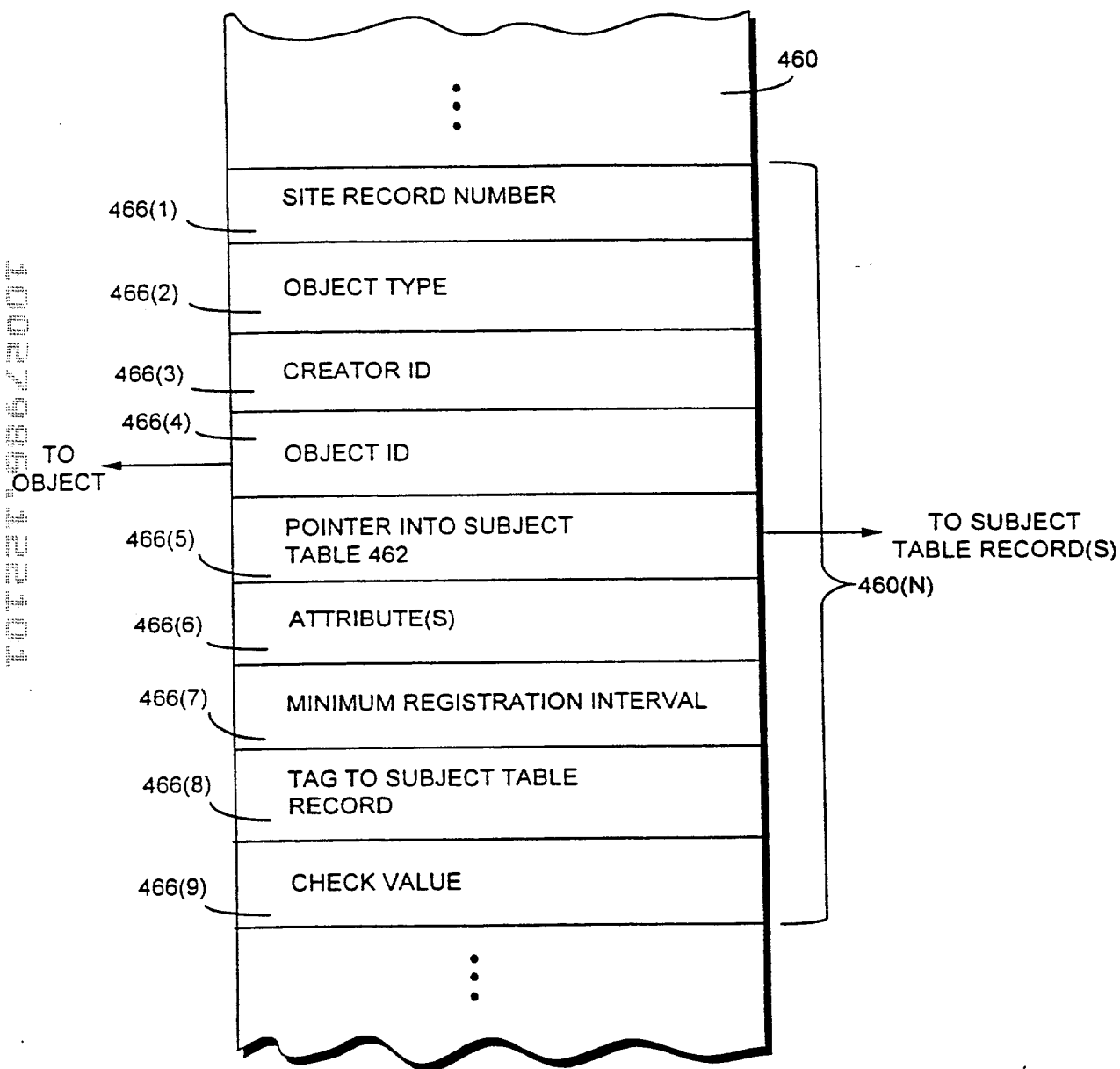


FIG. 30



10027966122101  
1022193622001



**FIG. 31**  
OBJECT REGISTRATION TABLE

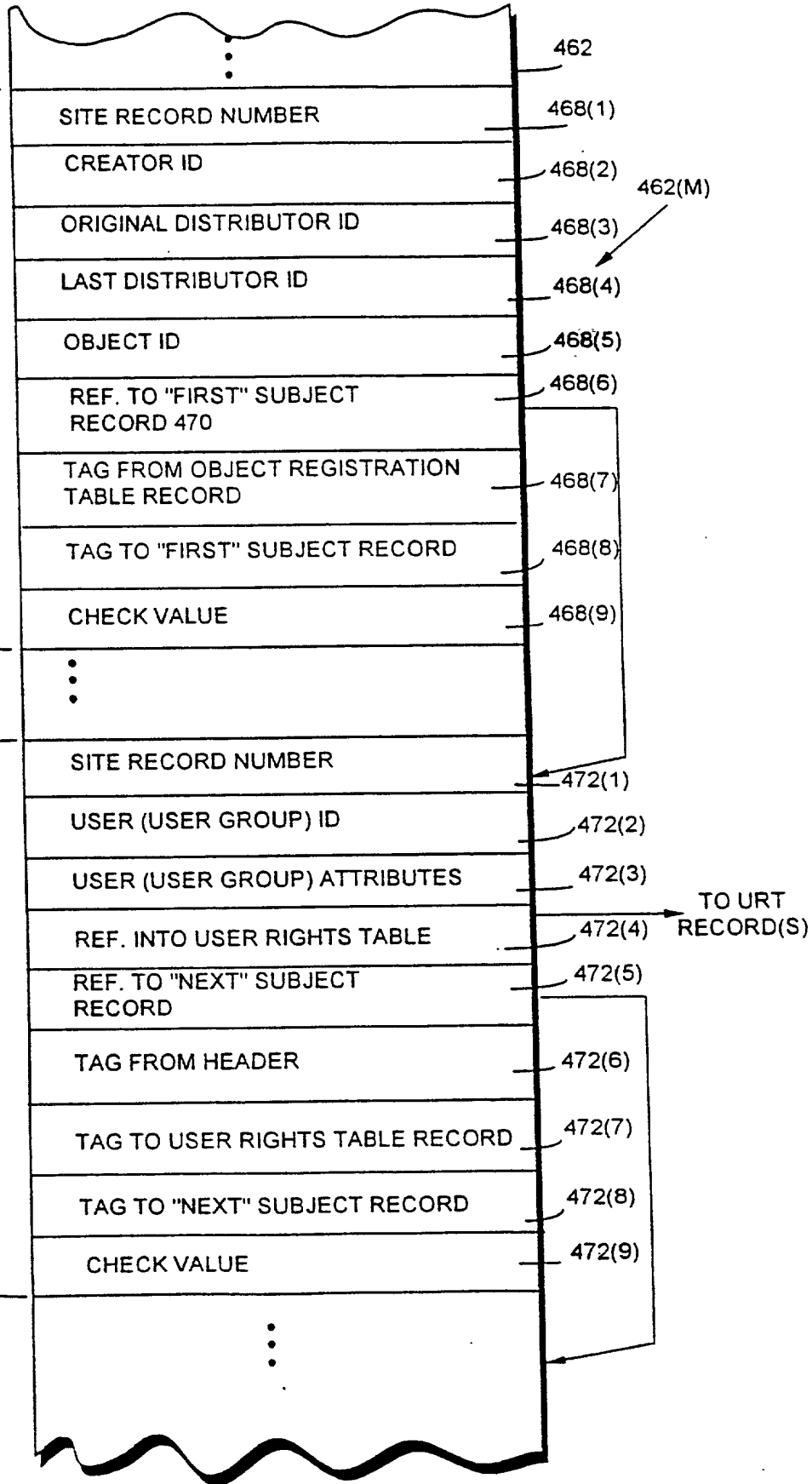


**FIG. 32**

SUBJECT  
TABLE

"HEADER"  
468

SUBJECT  
RECORD  
470(1)



**FIG. 33** USER RIGHTS TABLE

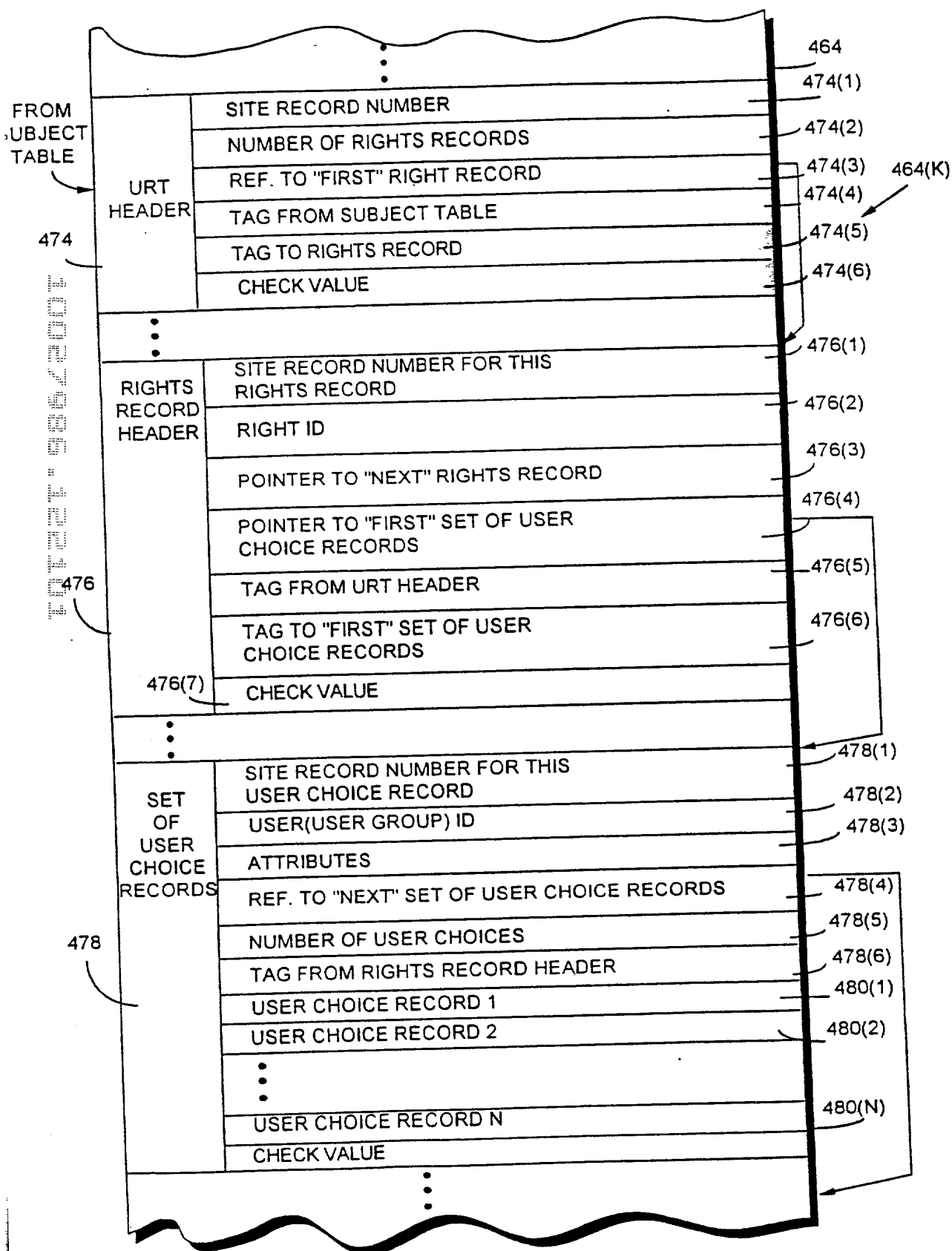
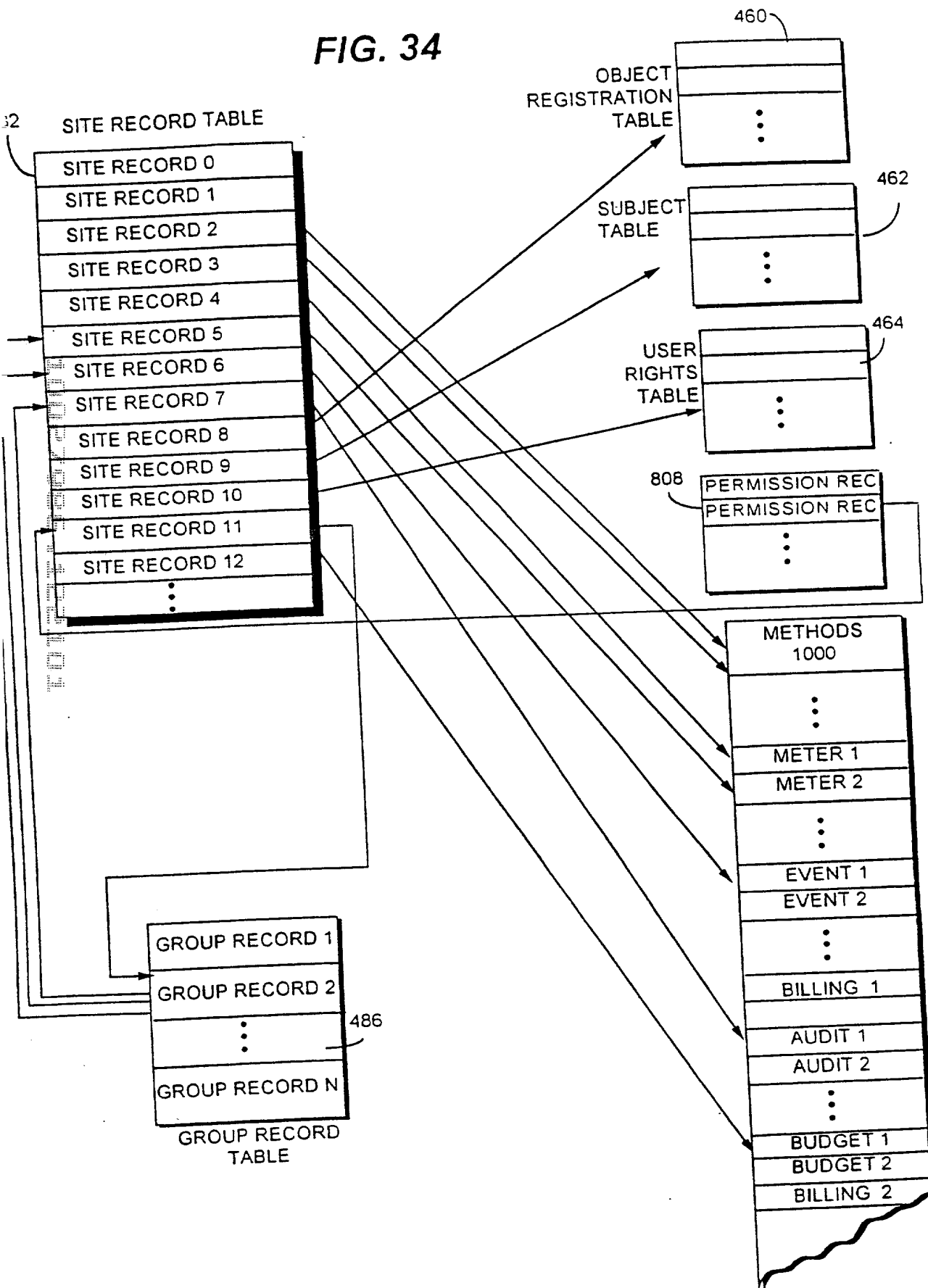
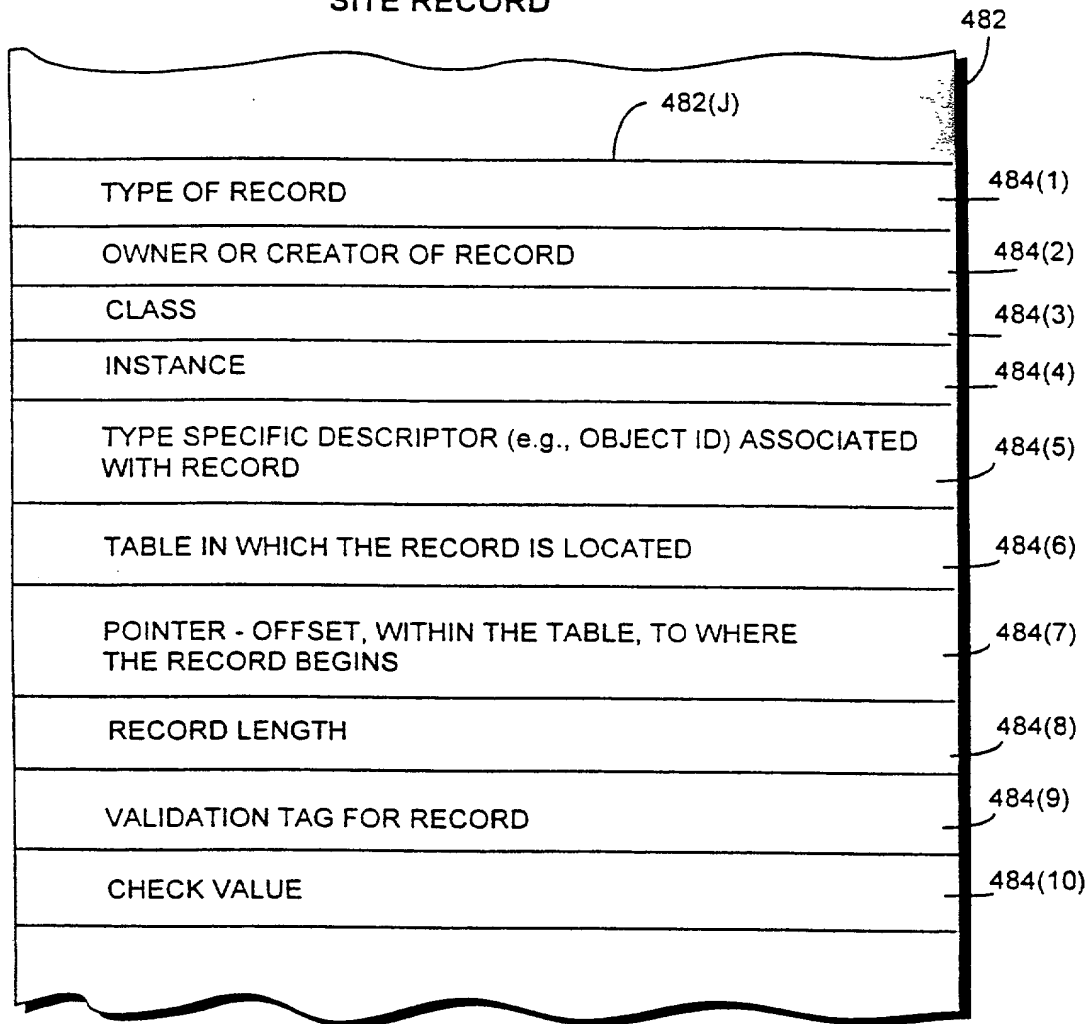


FIG. 34



**FIG. 34A**

**SITE RECORD**



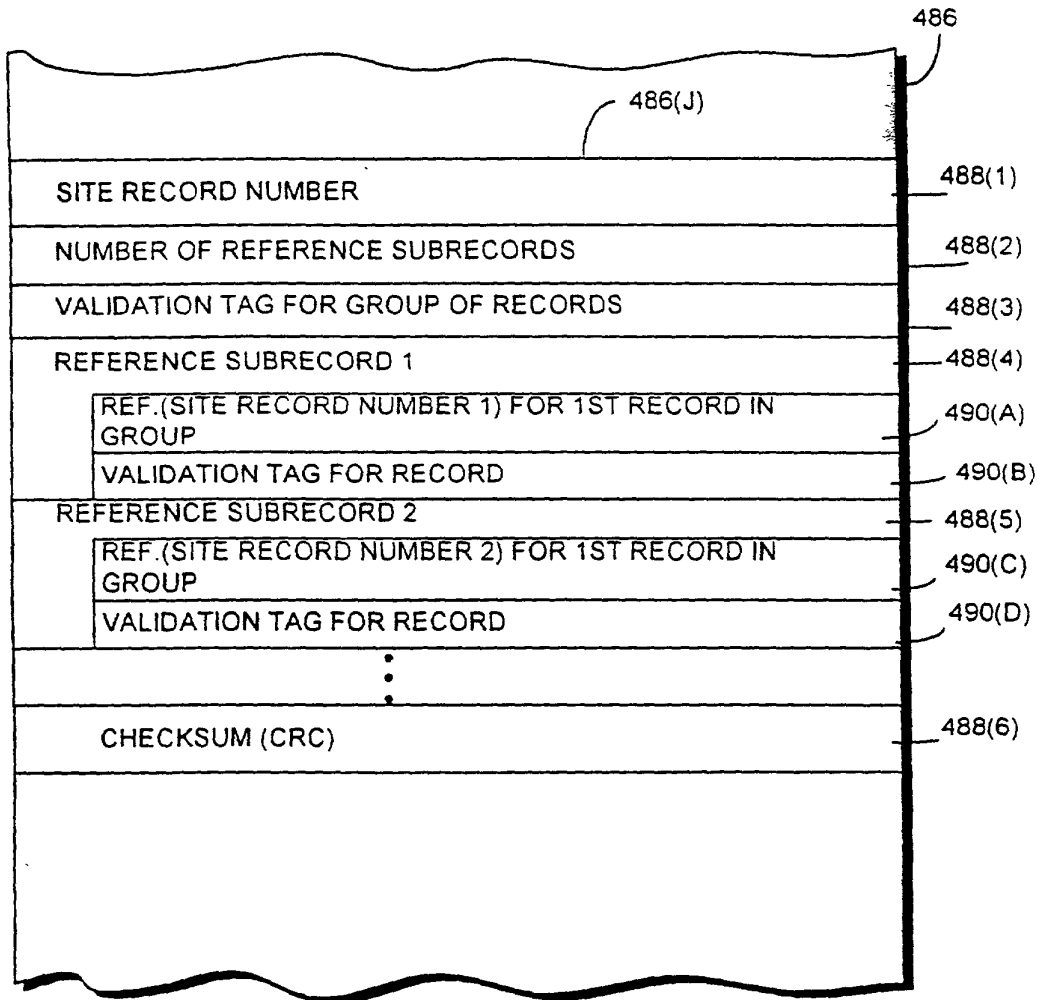
The diagram illustrates a 'SITE RECORD' structure, designated by the reference numeral 482. It is depicted as a vertical stack of fields, with the top field labeled 482(J). The subsequent fields are labeled 484(1) through 484(10) on the right side. The fields are: TYPE OF RECORD, OWNER OR CREATOR OF RECORD, CLASS, INSTANCE, TYPE SPECIFIC DESCRIPTOR (e.g., OBJECT ID) ASSOCIATED WITH RECORD, TABLE IN WHICH THE RECORD IS LOCATED, POINTER - OFFSET, WITHIN THE TABLE, TO WHERE THE RECORD BEGINS, RECORD LENGTH, VALIDATION TAG FOR RECORD, and CHECK VALUE. The bottom of the structure is indicated by a wavy line.

482	
482(J)	
TYPE OF RECORD	484(1)
OWNER OR CREATOR OF RECORD	484(2)
CLASS	484(3)
INSTANCE	484(4)
TYPE SPECIFIC DESCRIPTOR (e.g., OBJECT ID) ASSOCIATED WITH RECORD	484(5)
TABLE IN WHICH THE RECORD IS LOCATED	484(6)
POINTER - OFFSET, WITHIN THE TABLE, TO WHERE THE RECORD BEGINS	484(7)
RECORD LENGTH	484(8)
VALIDATION TAG FOR RECORD	484(9)
CHECK VALUE	484(10)

**FIG. 34B**

**GROUP RECORD**

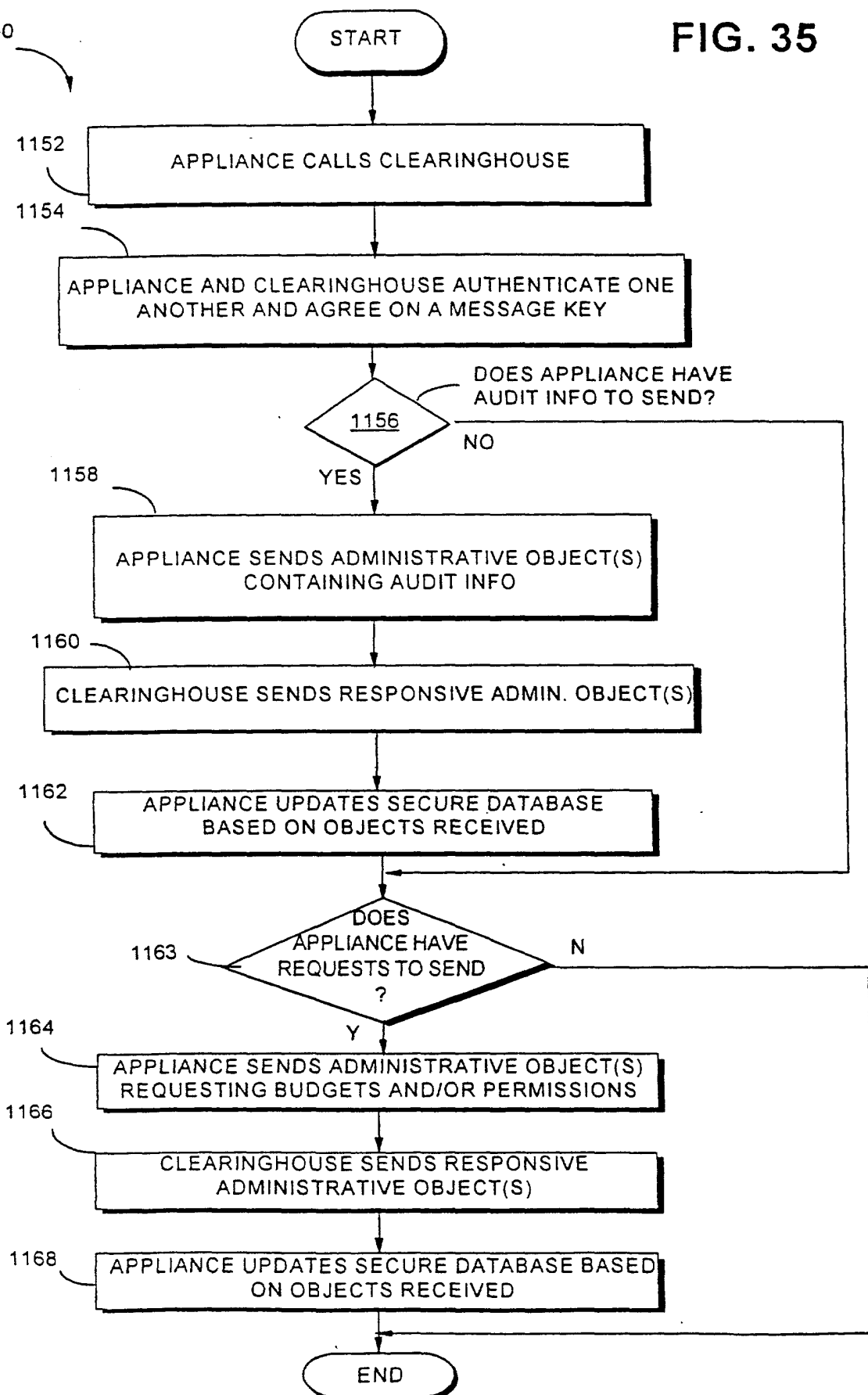
FIG. 34B



1150

FIG. 35

10027986 122101



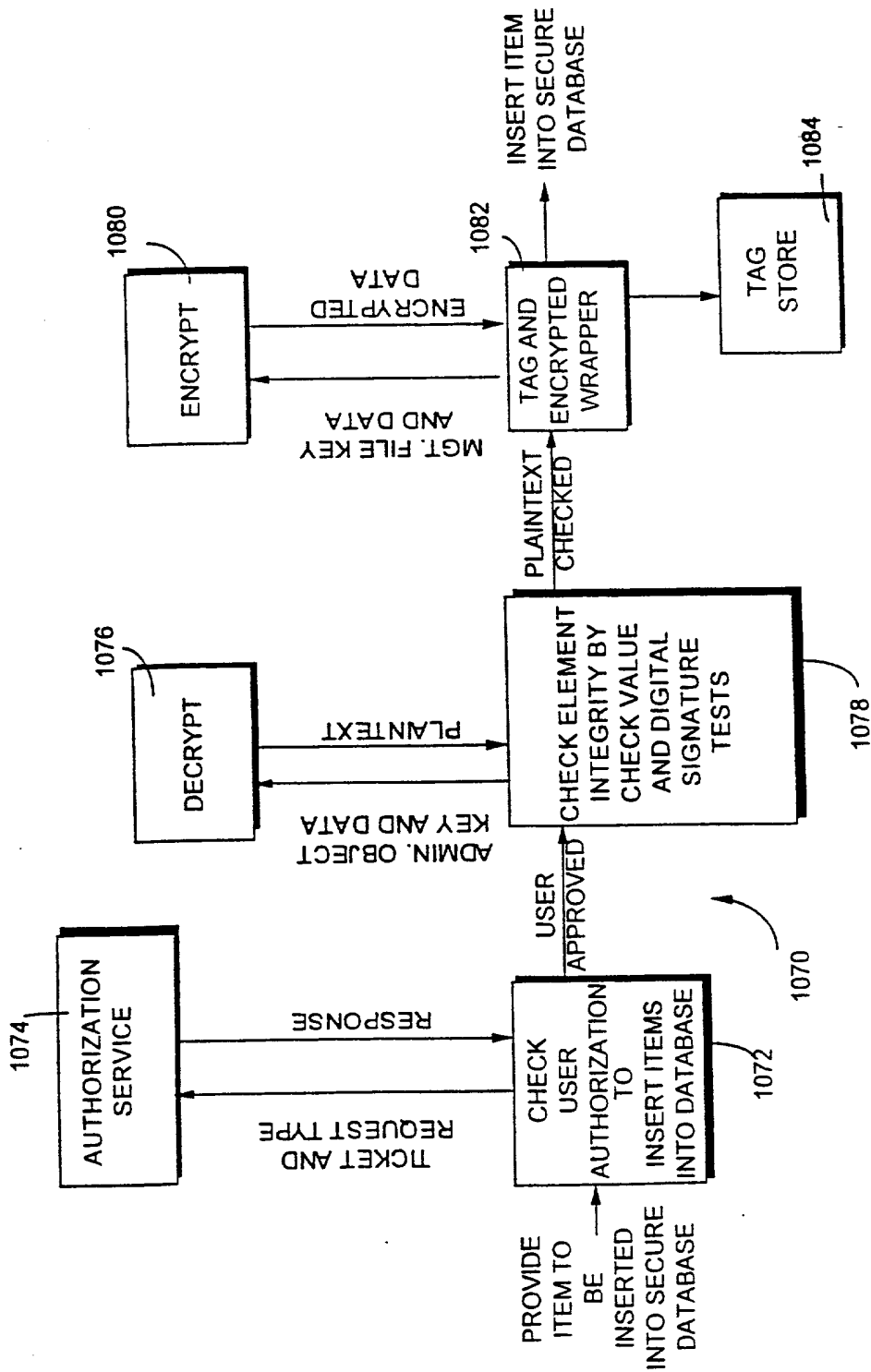


FIG. 37

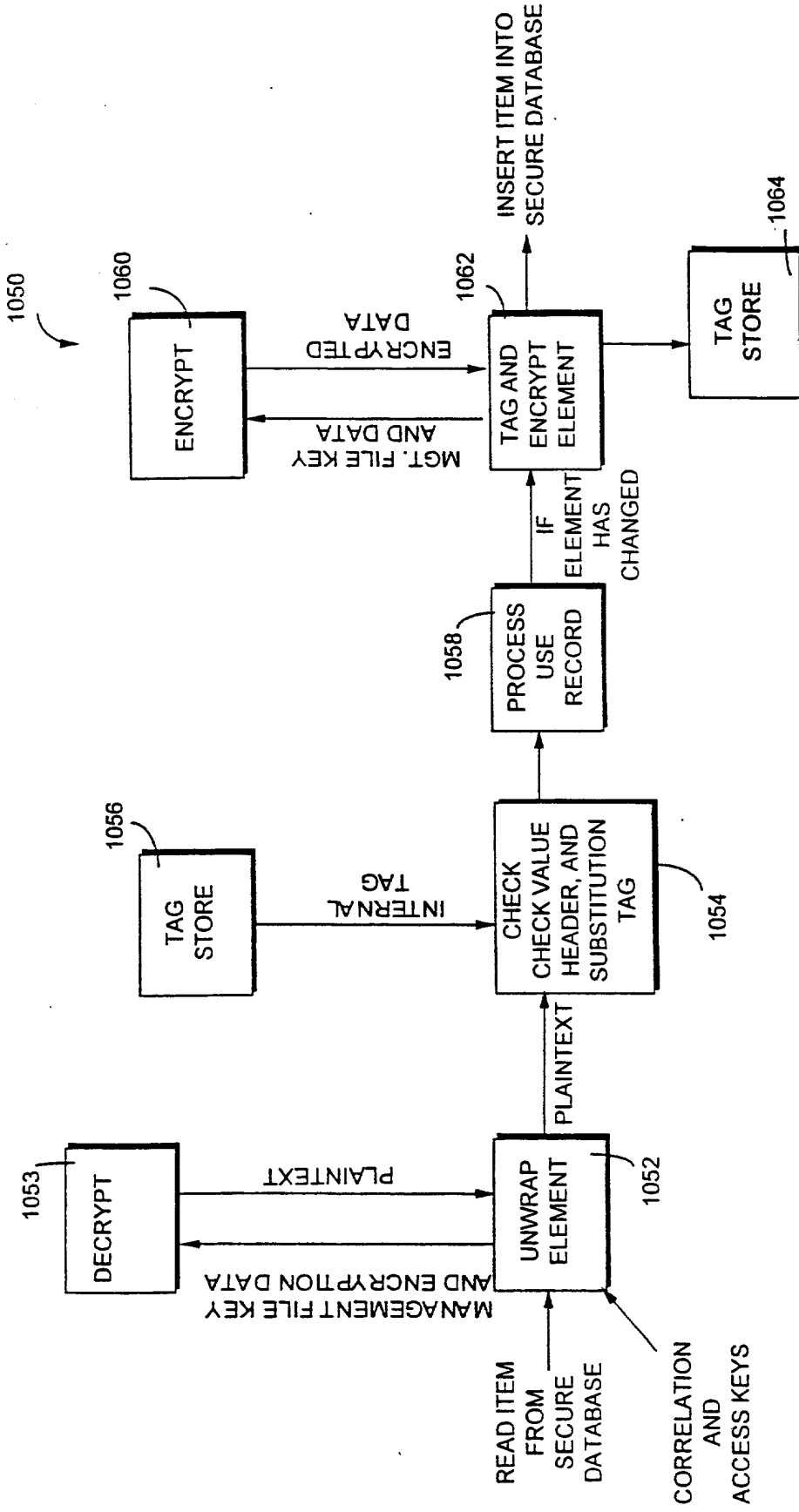
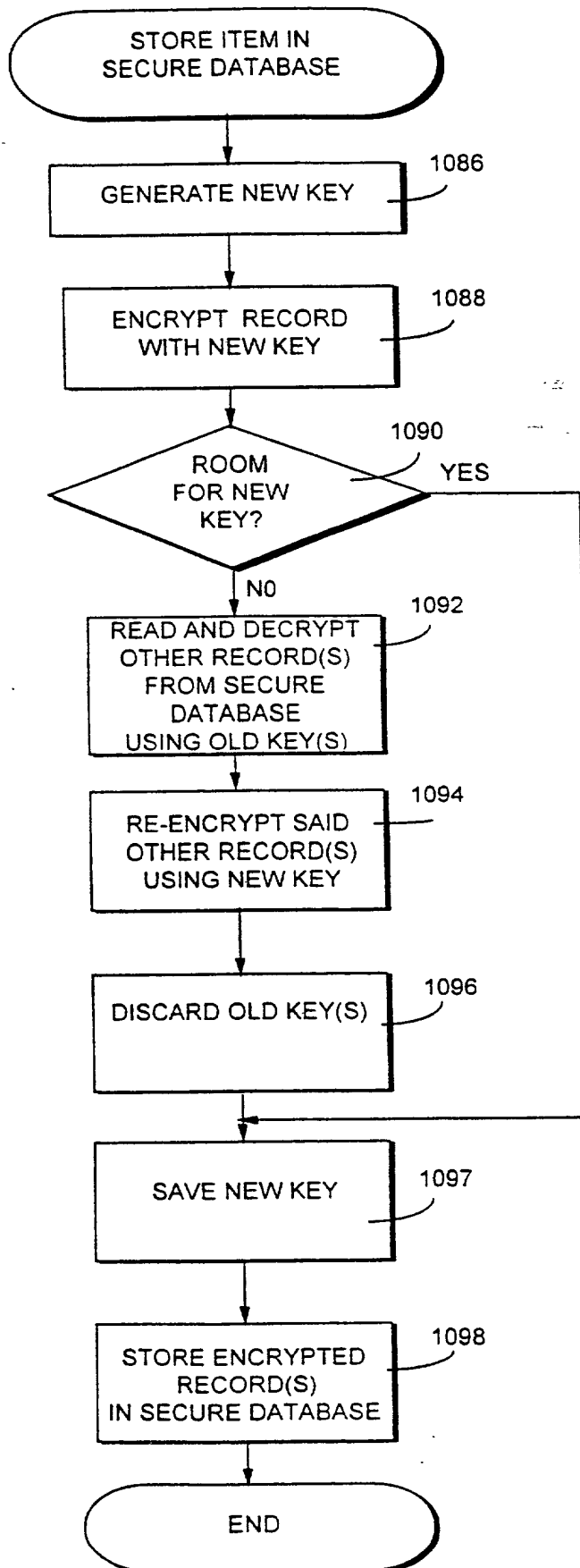
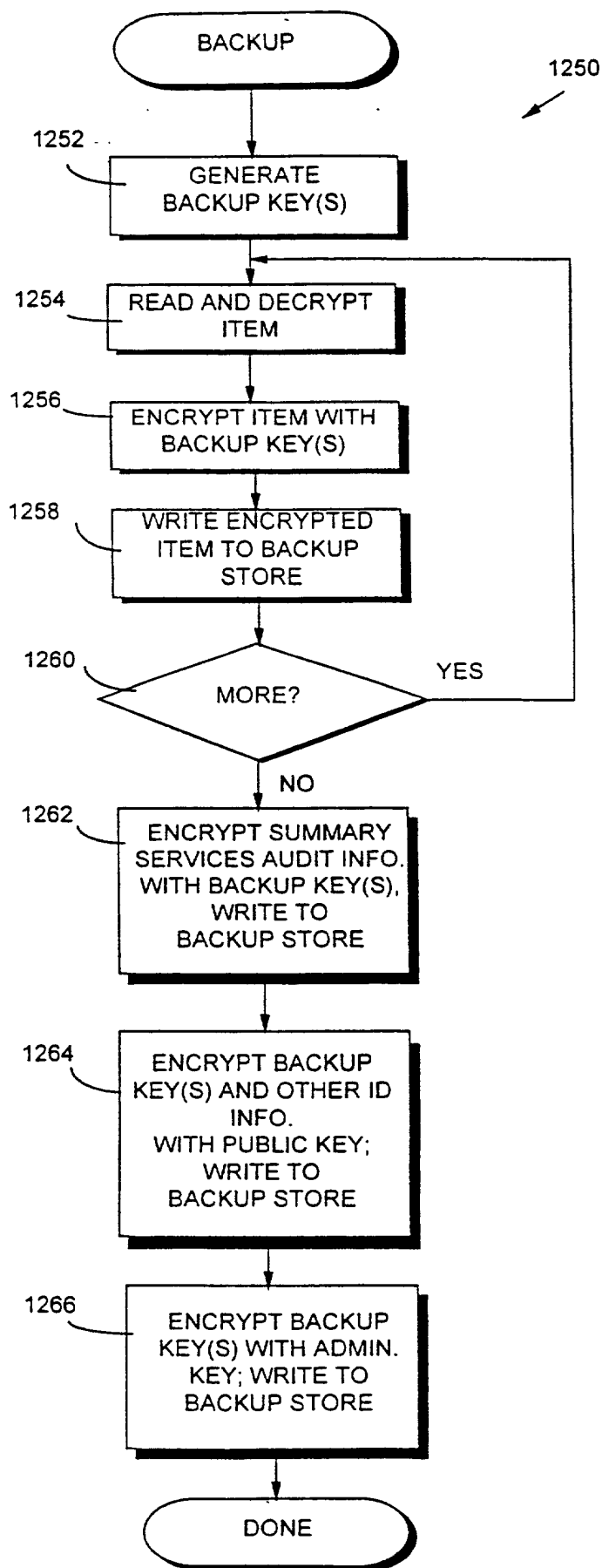




FIG. 38



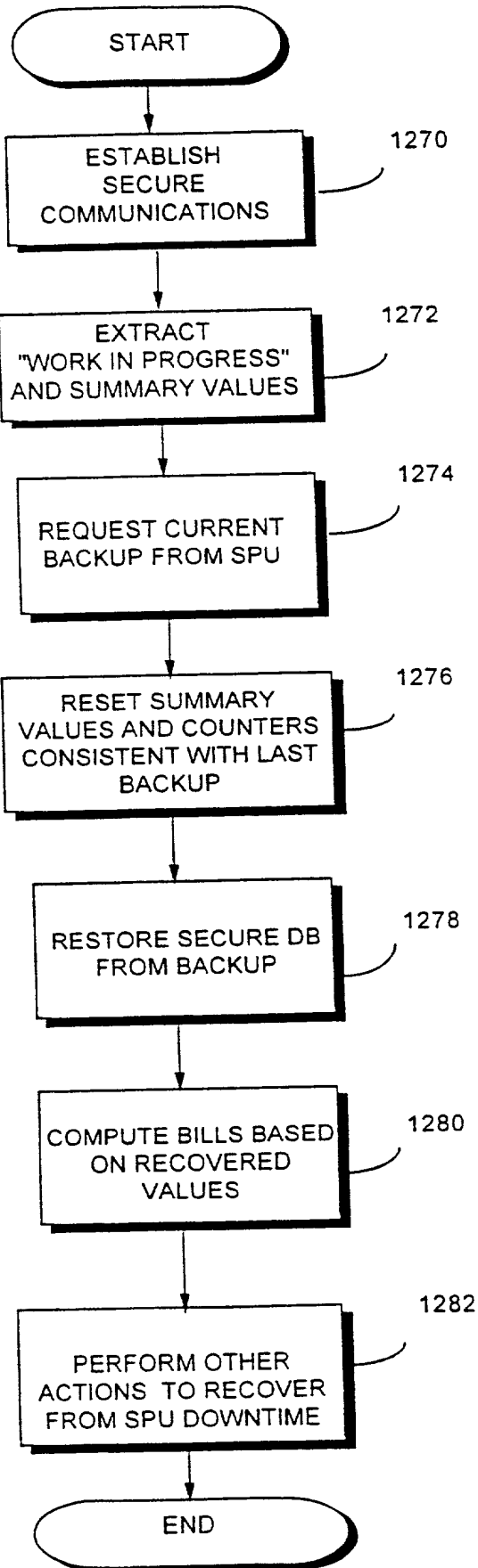
**FIG. 39**  
BACKUP



**FIG. 40**

RECOVER SECURE DATABASE

1268



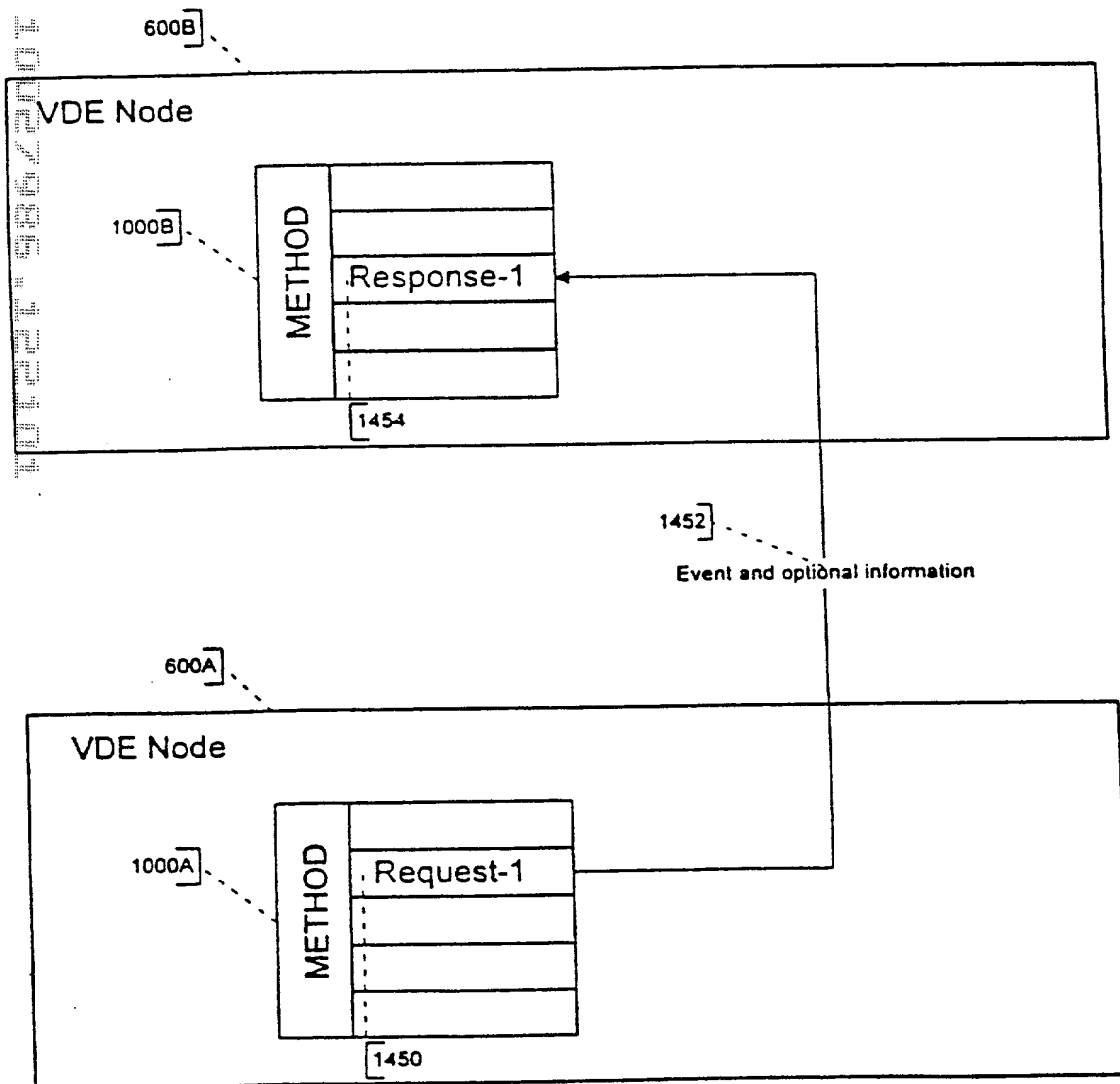


Figure 41a

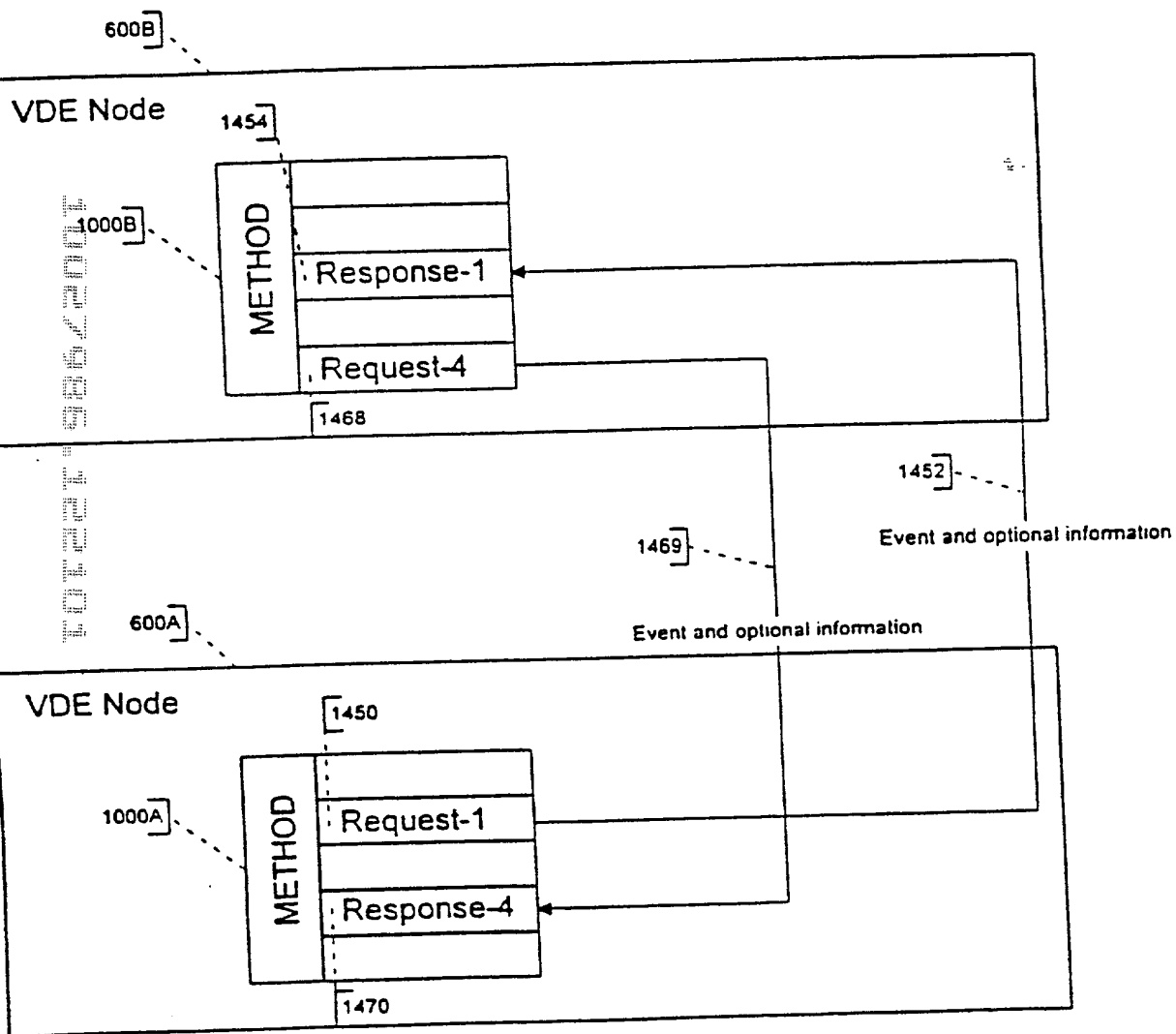


Figure 41b

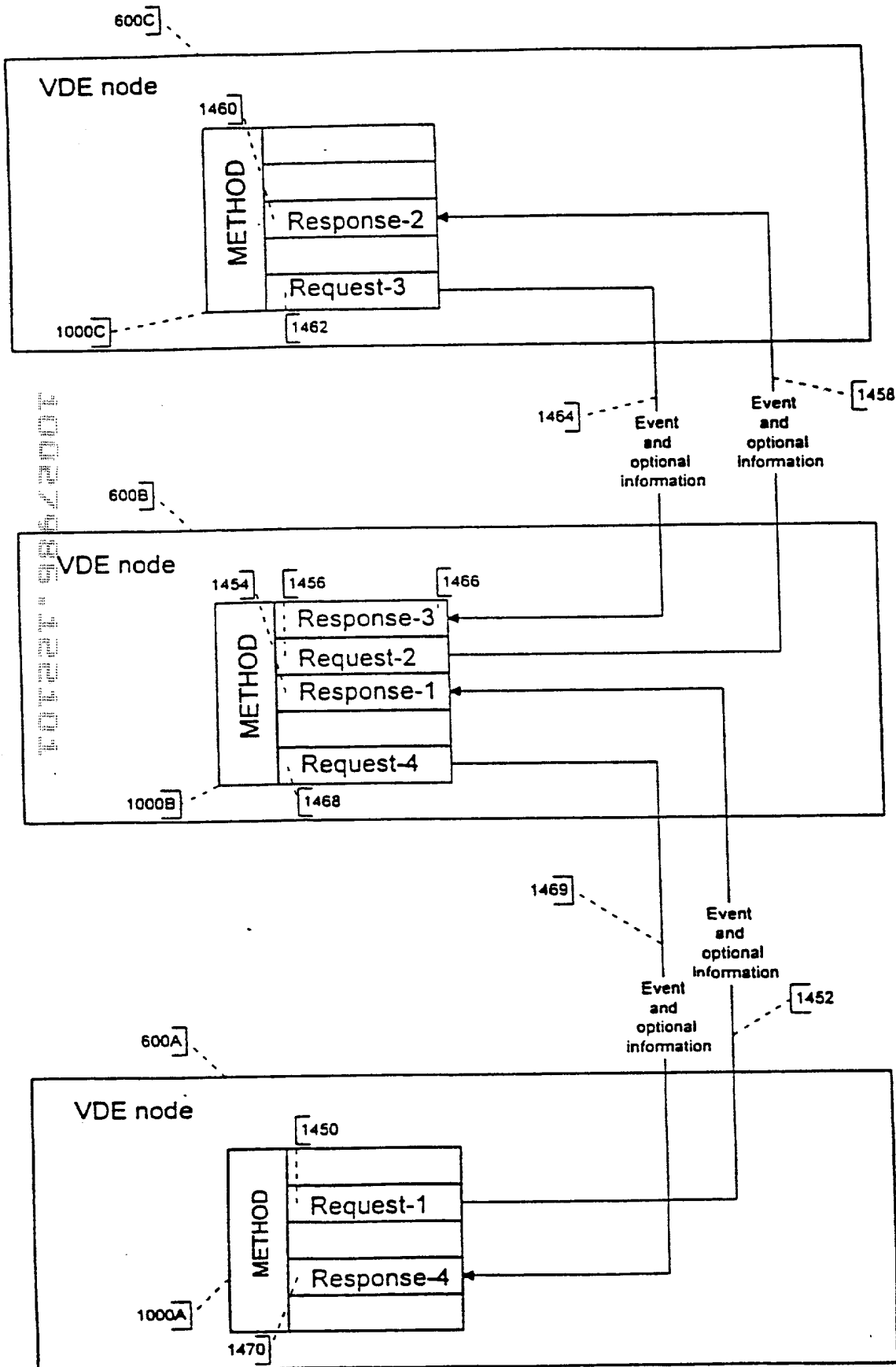


Figure 41c

10027986 12101  
101221 986/2001

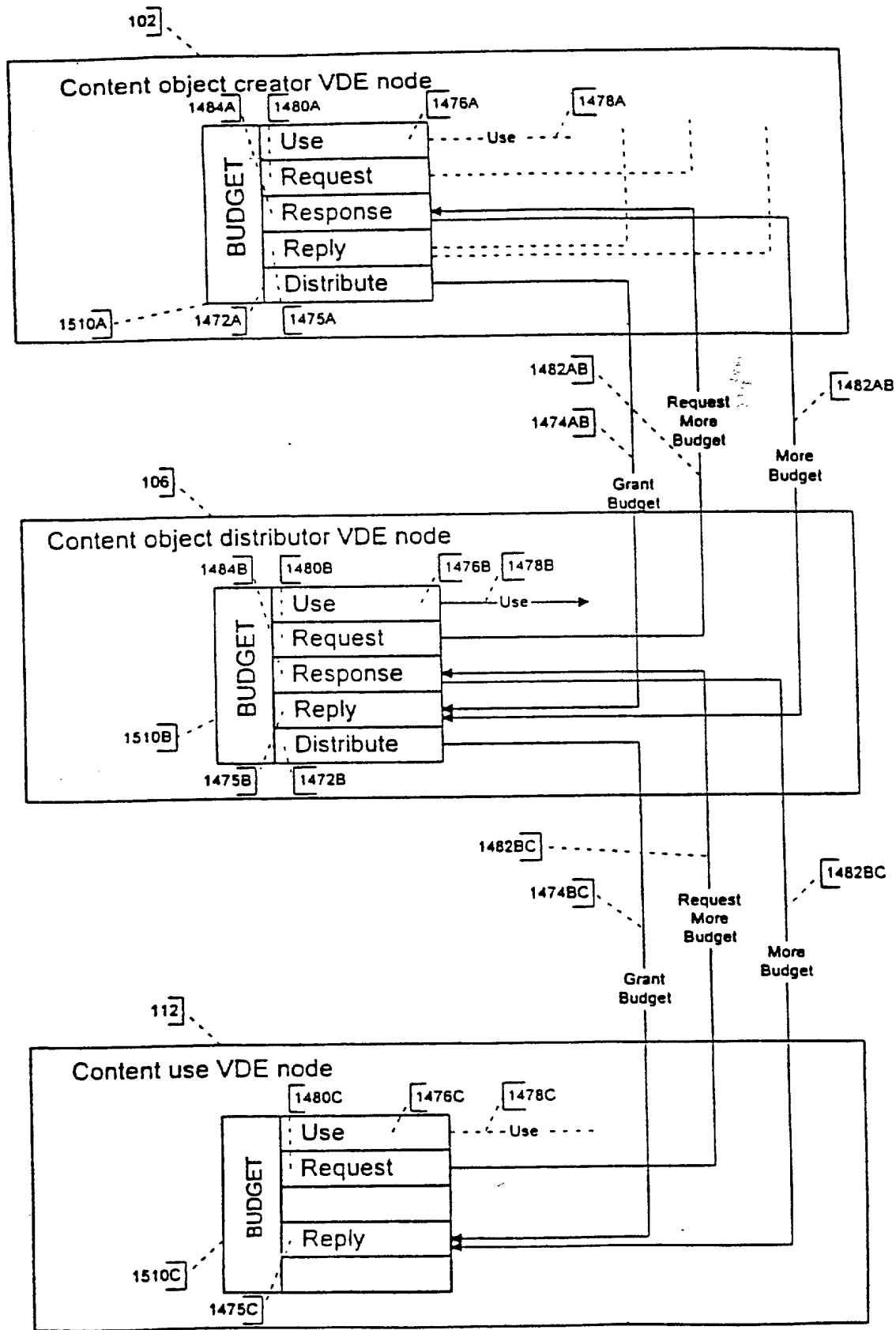


Figure 41d

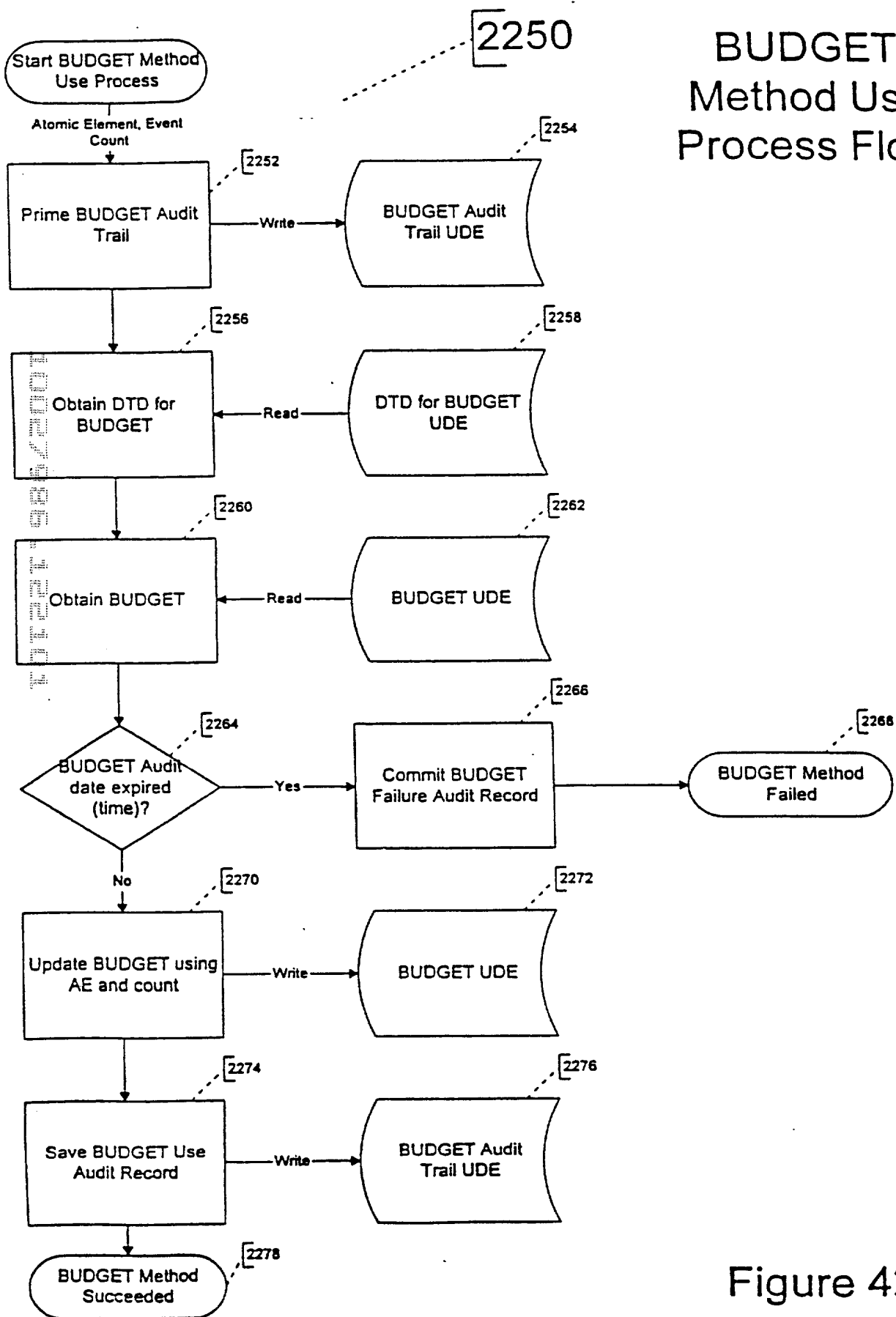


Figure 42a



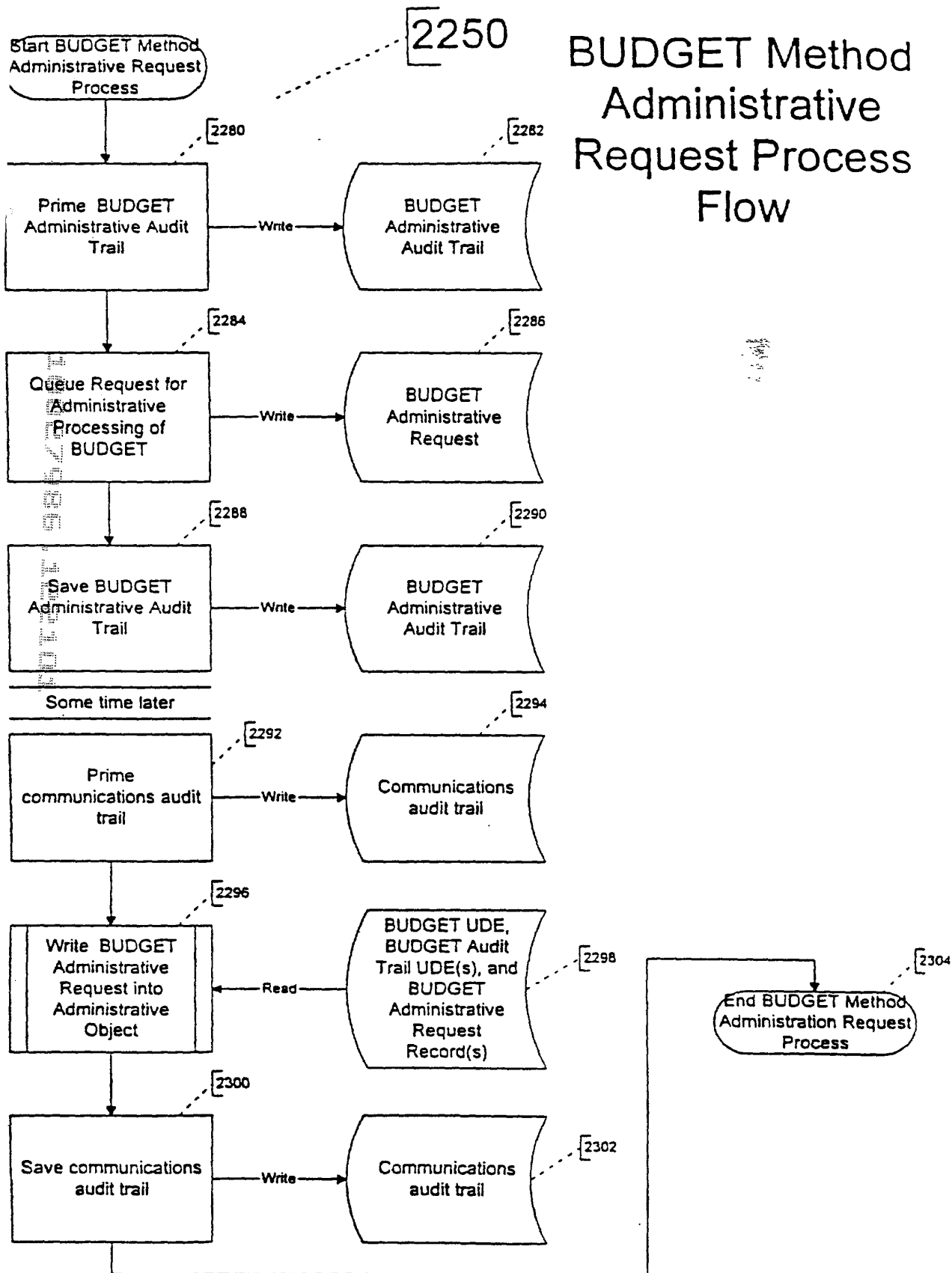
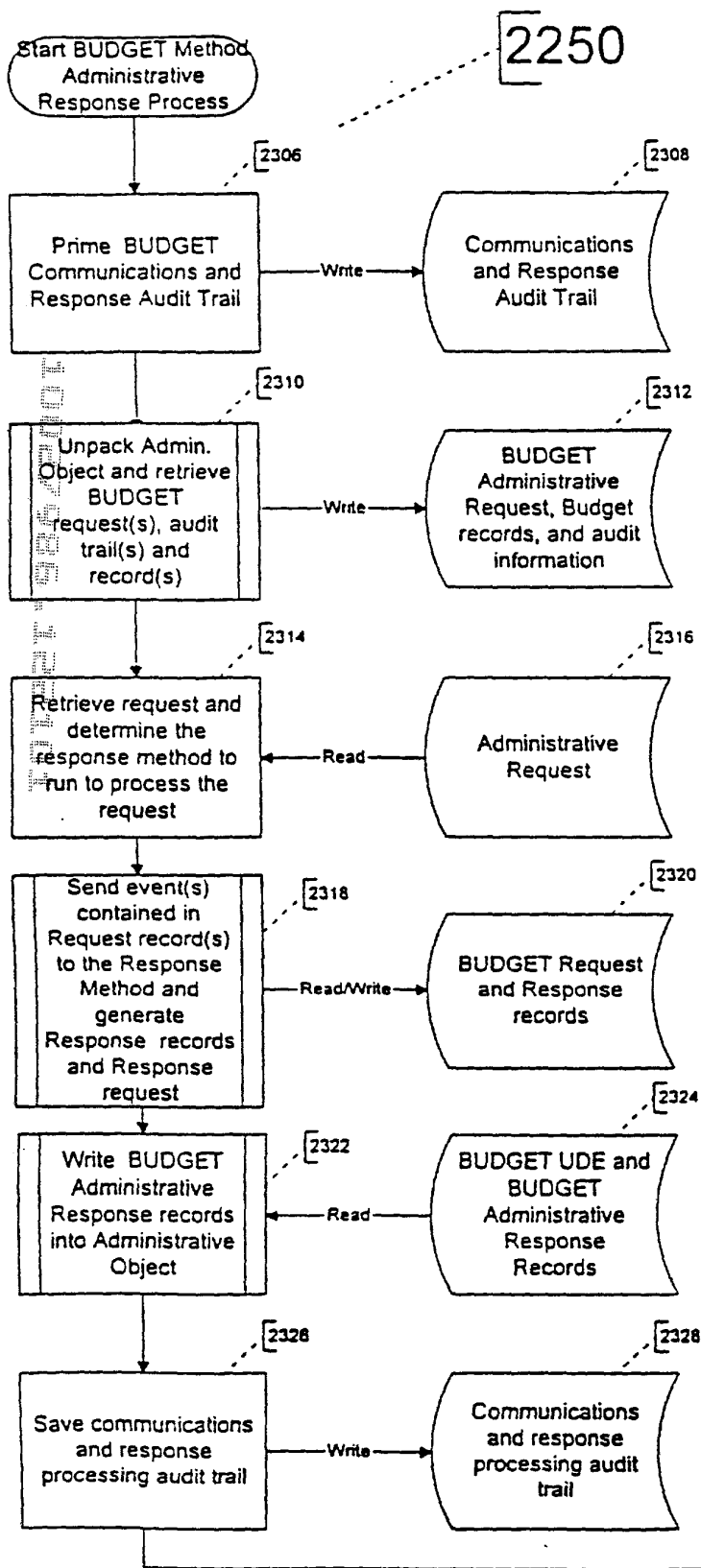


Figure 42b



## BUDGET Method Administrative Response Process Flow

Figure 42c

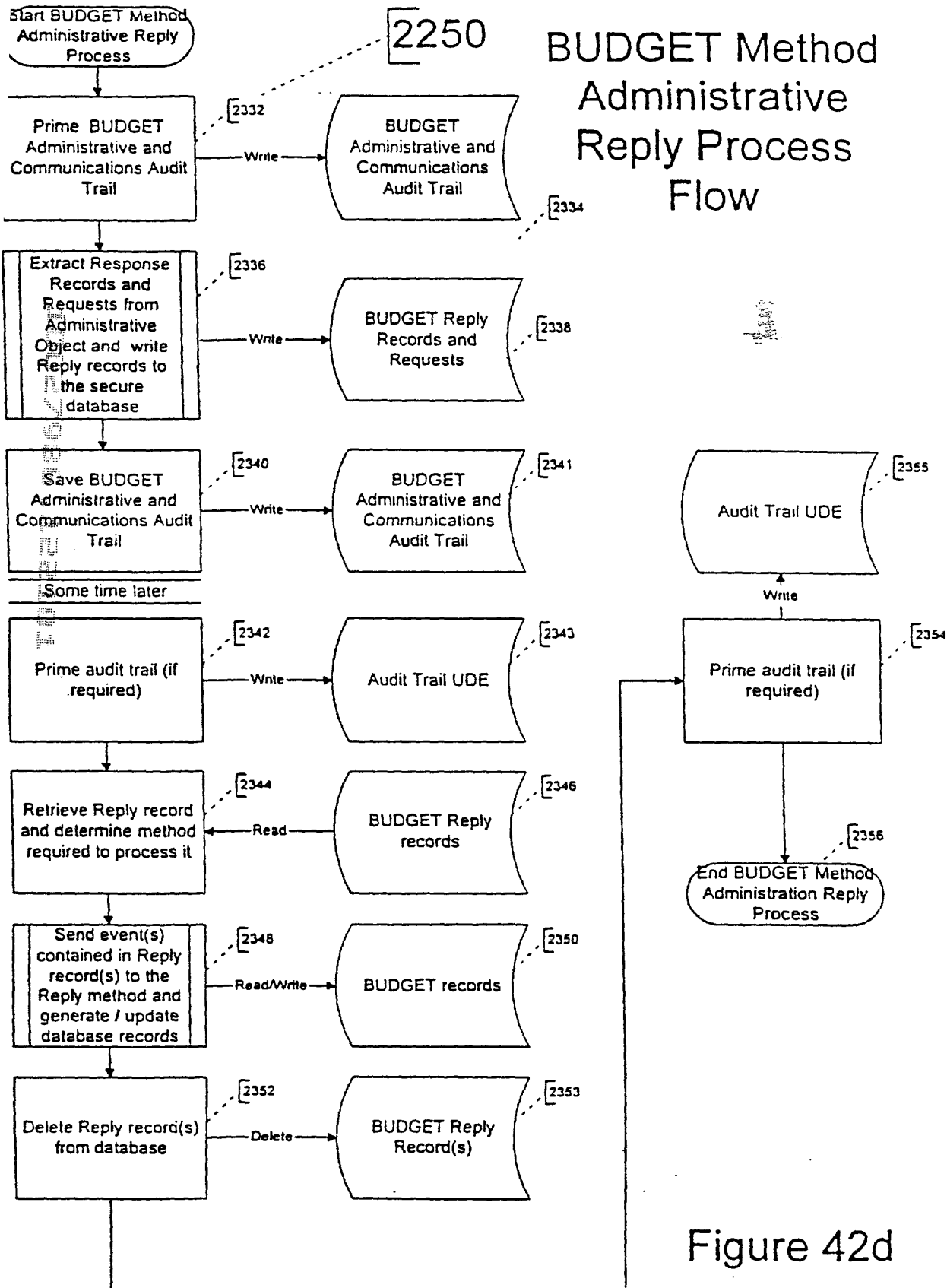


Figure 42d

# REGISTER Method Use Process Flow

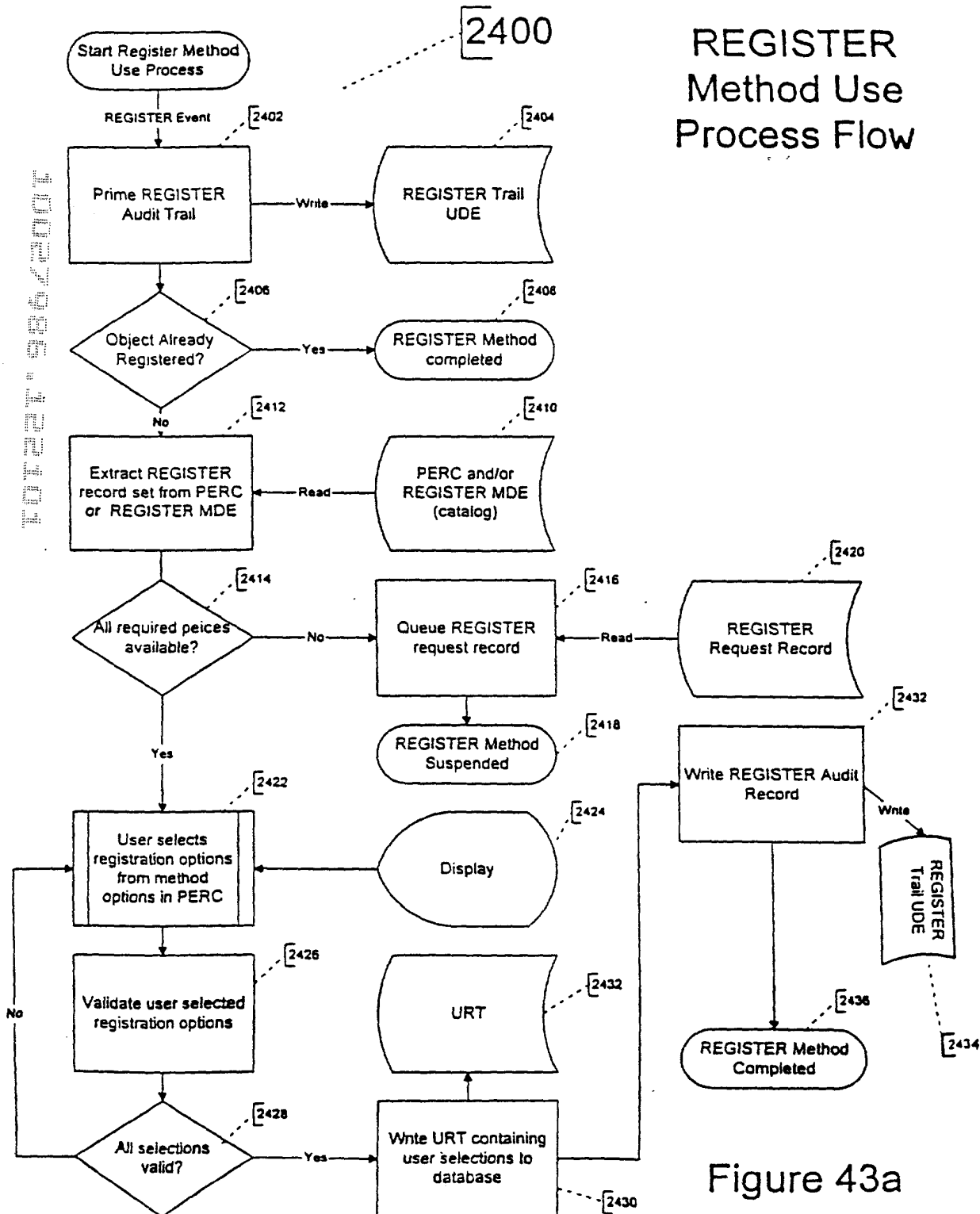


Figure 43a

# REGISTER Method Administrative Request Process Flow

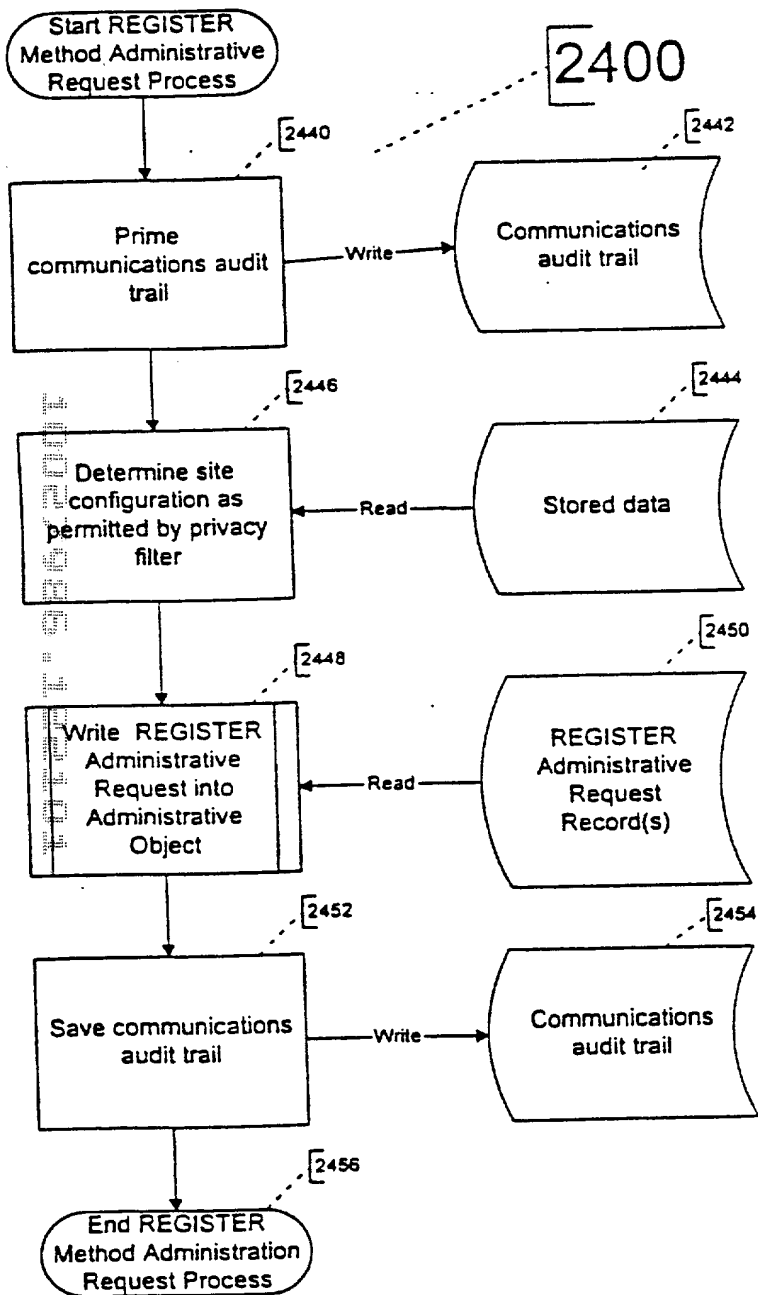


Figure 43b

# REGISTER Method Administrative Response Process Flow

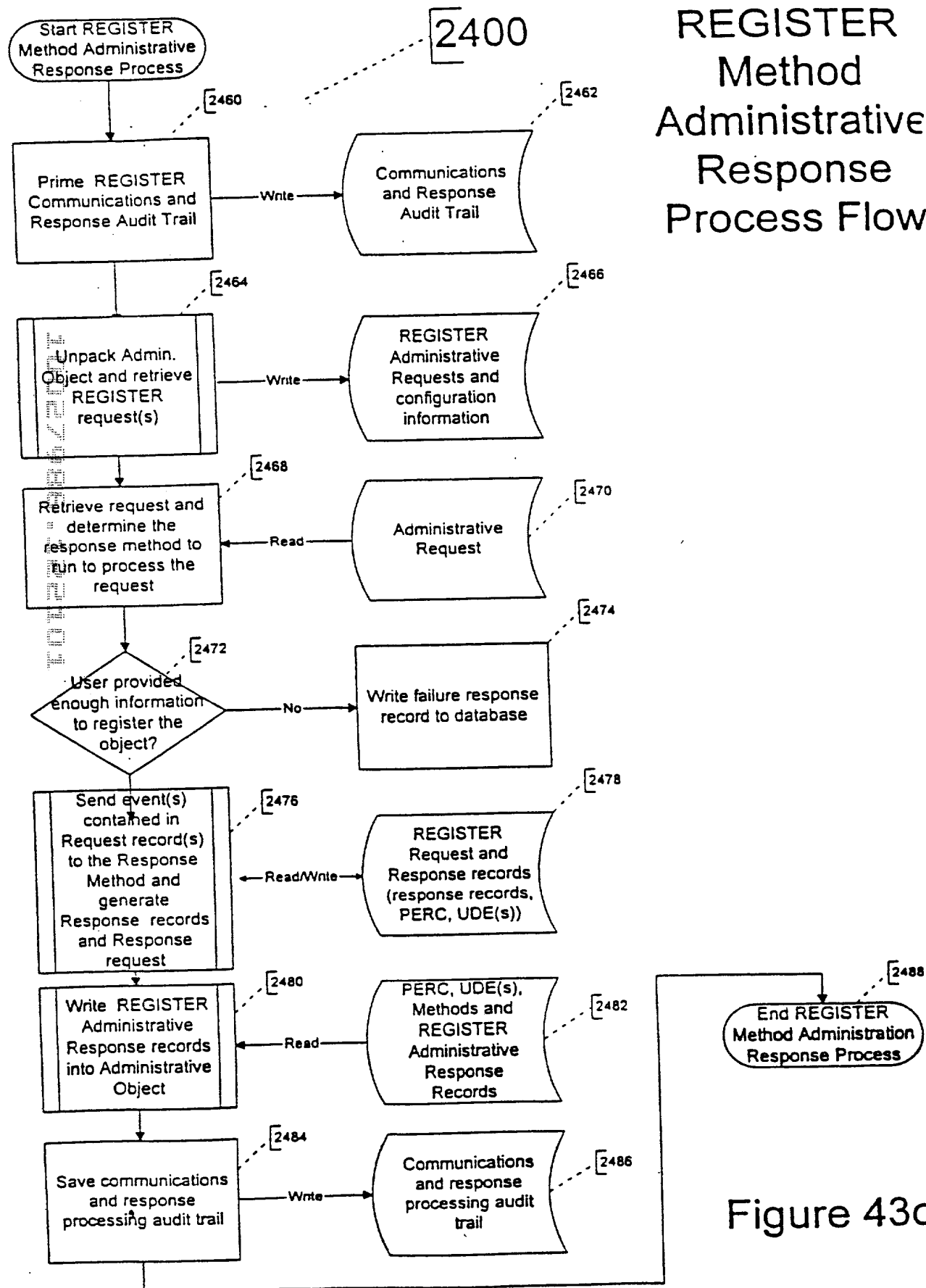


Figure 43c

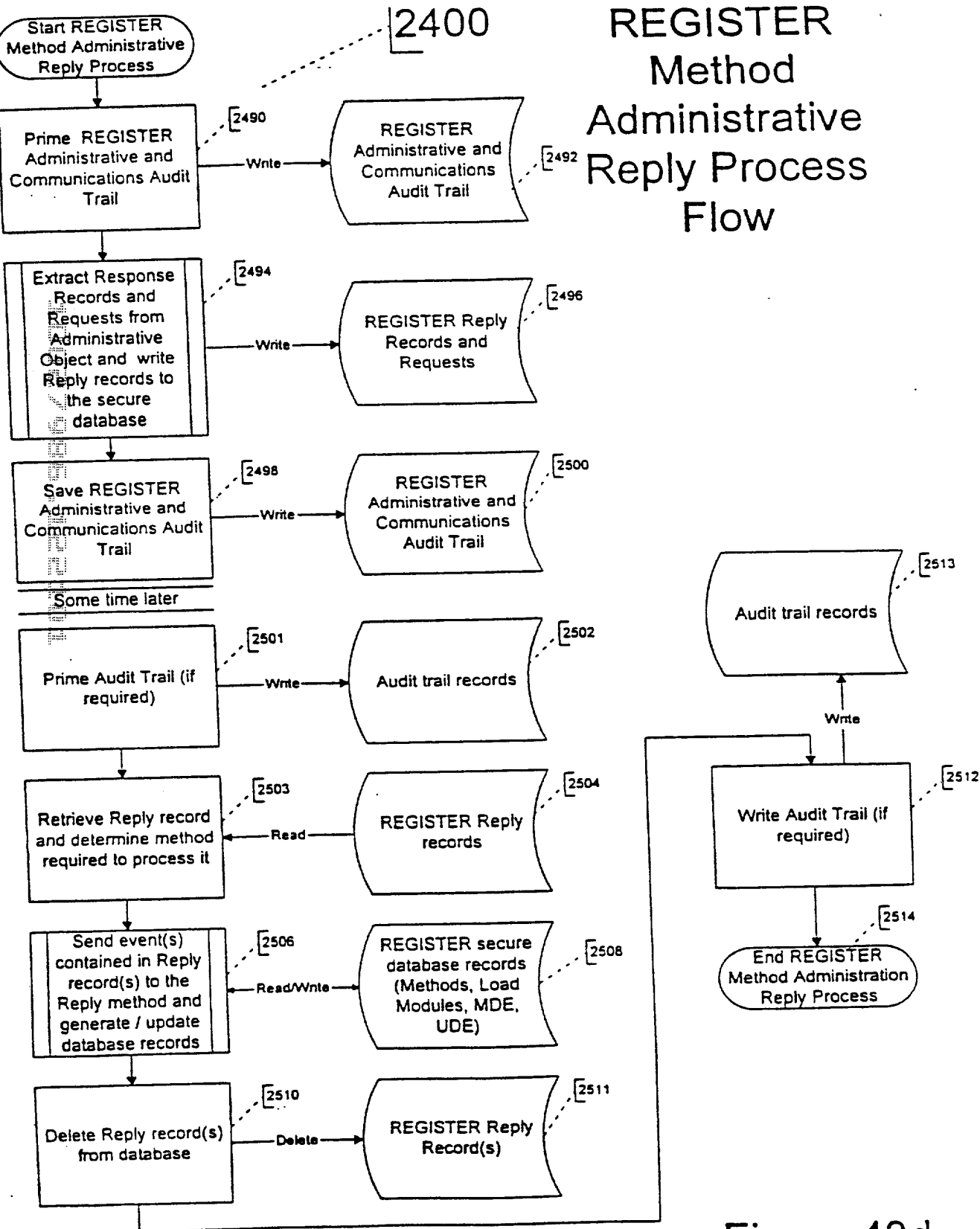


Figure 43d

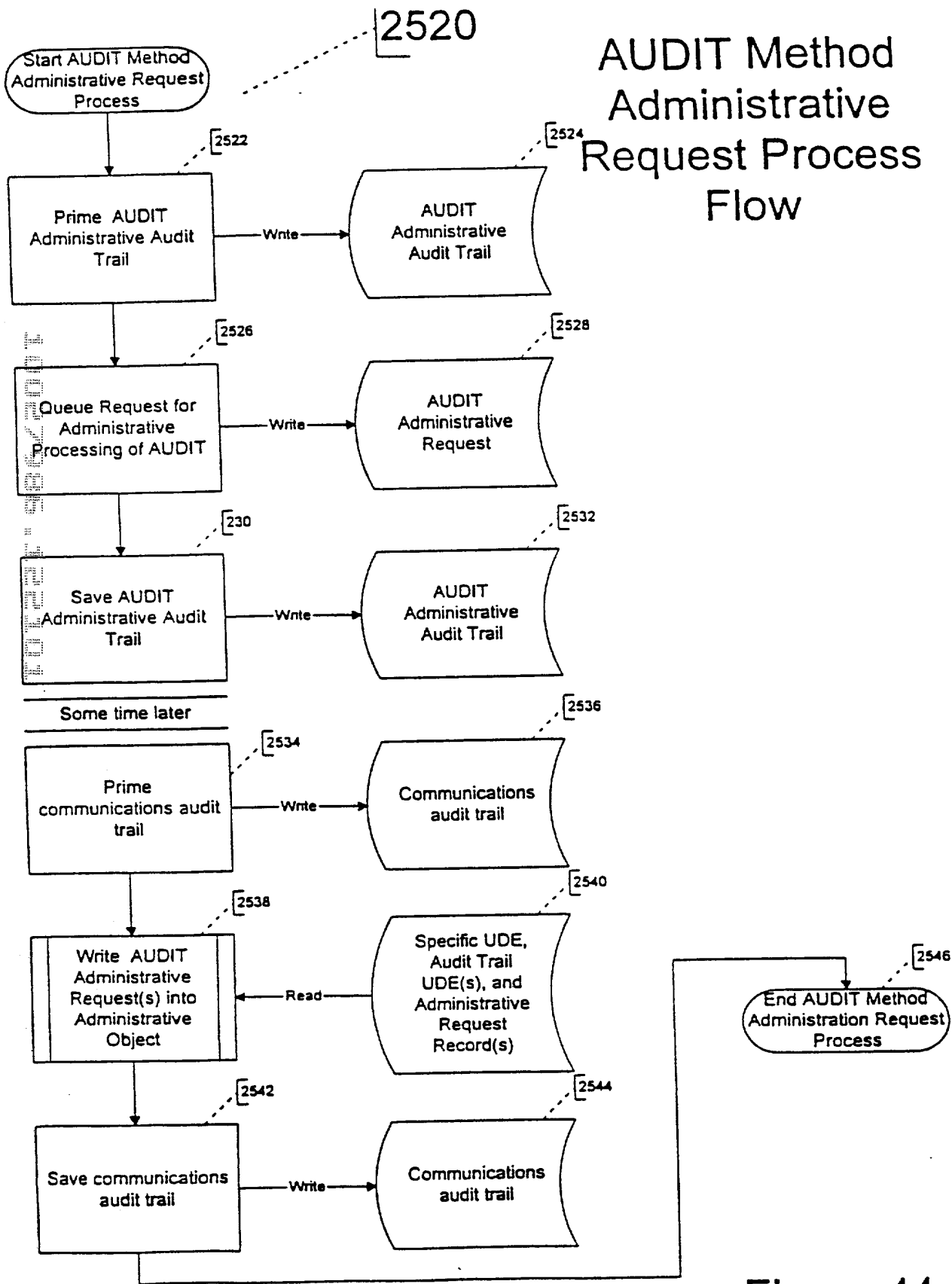


Figure 44a



# AUDIT Method Administrative Response Process Flow

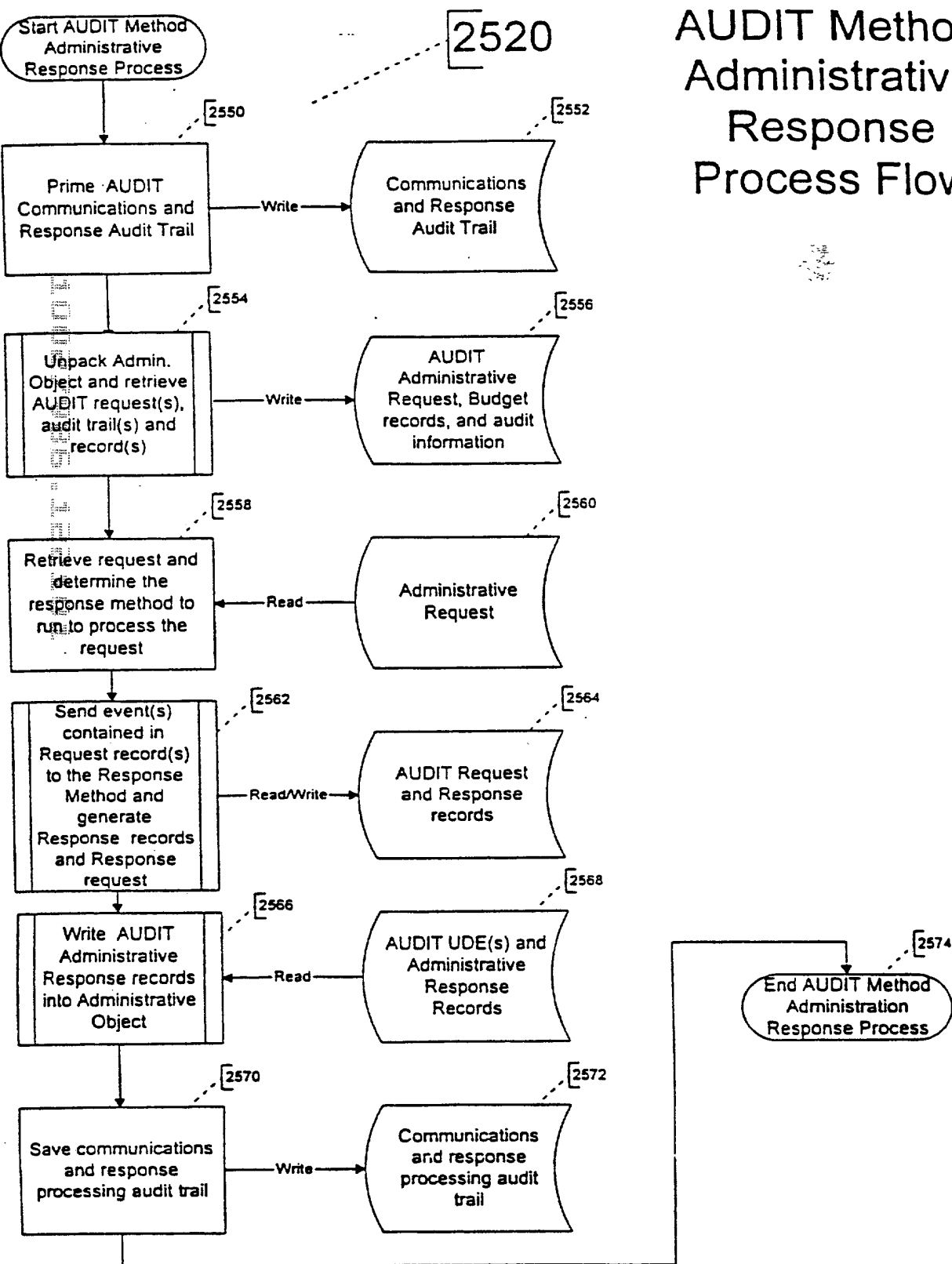


Figure 44b

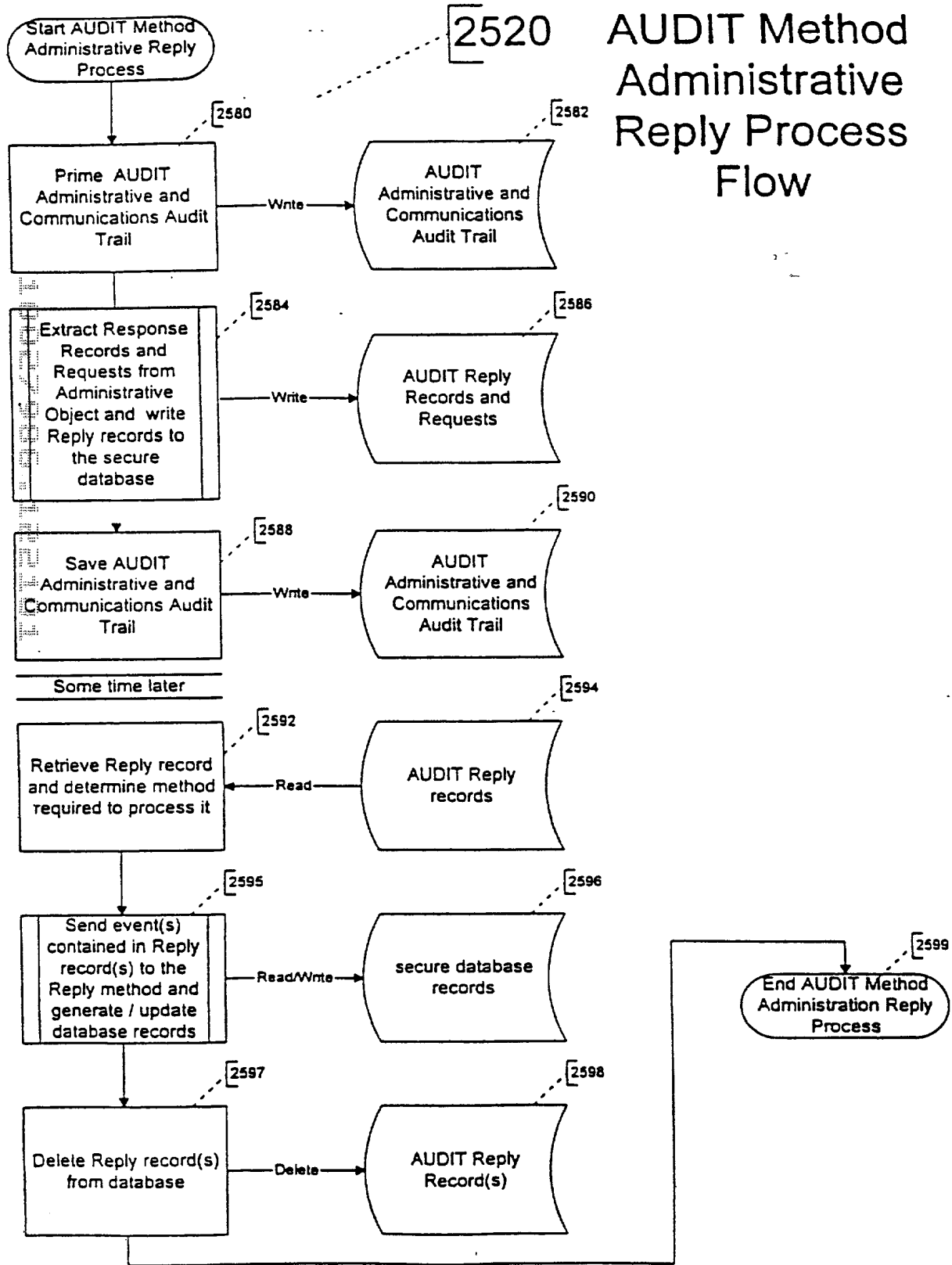


Figure 44c

FIG. 45

FOI 221 986/2001

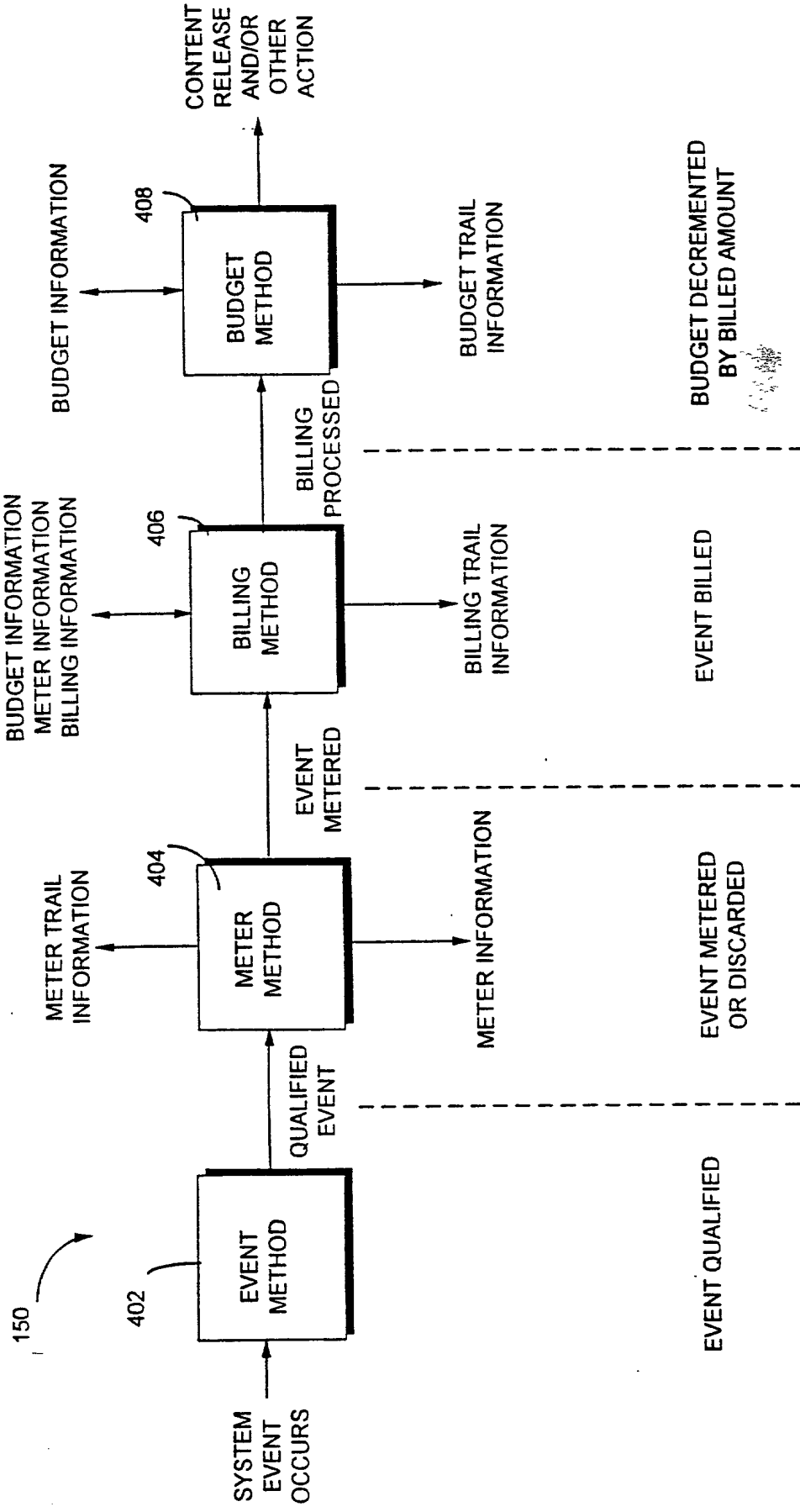


FIG. 46

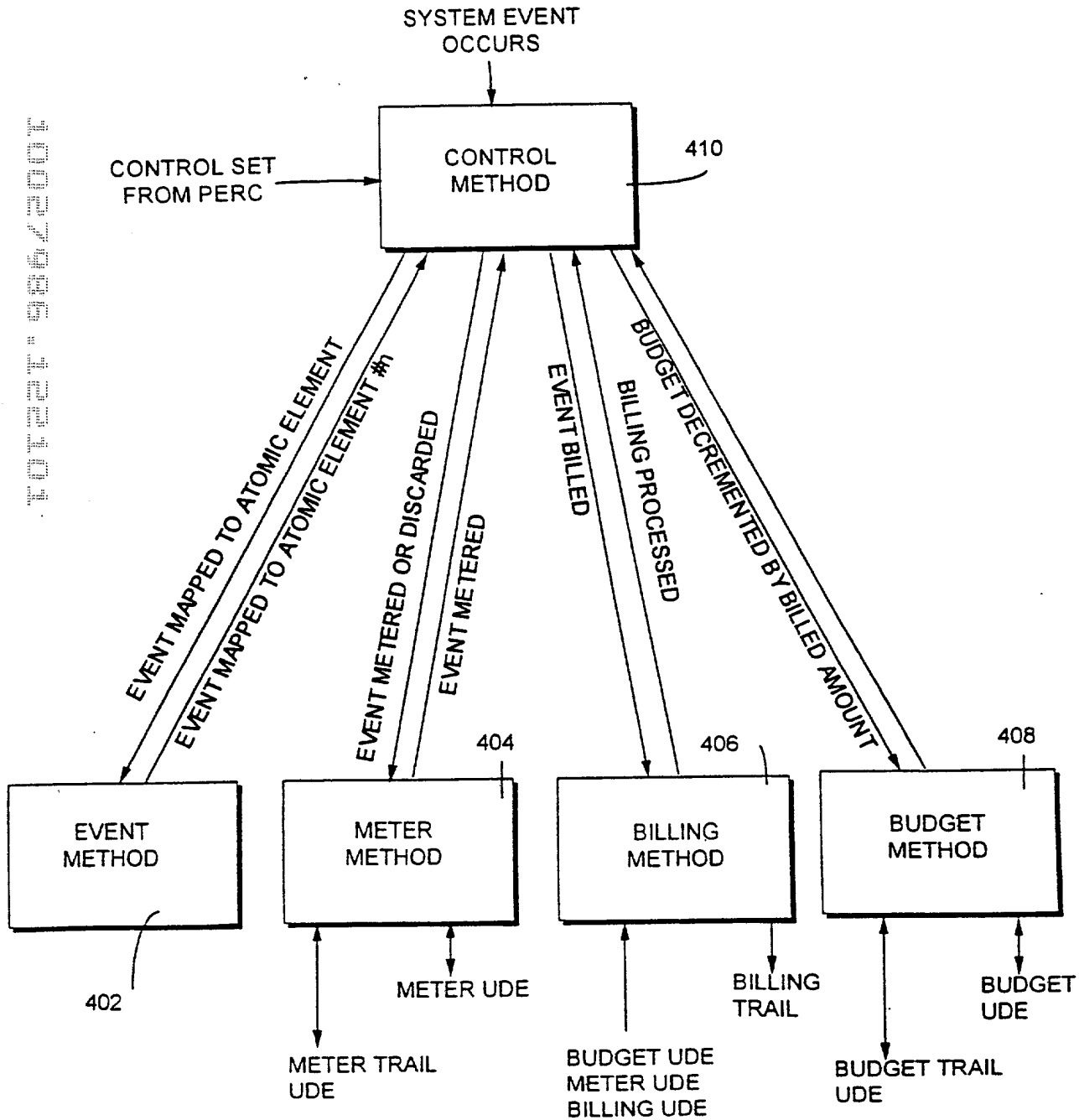
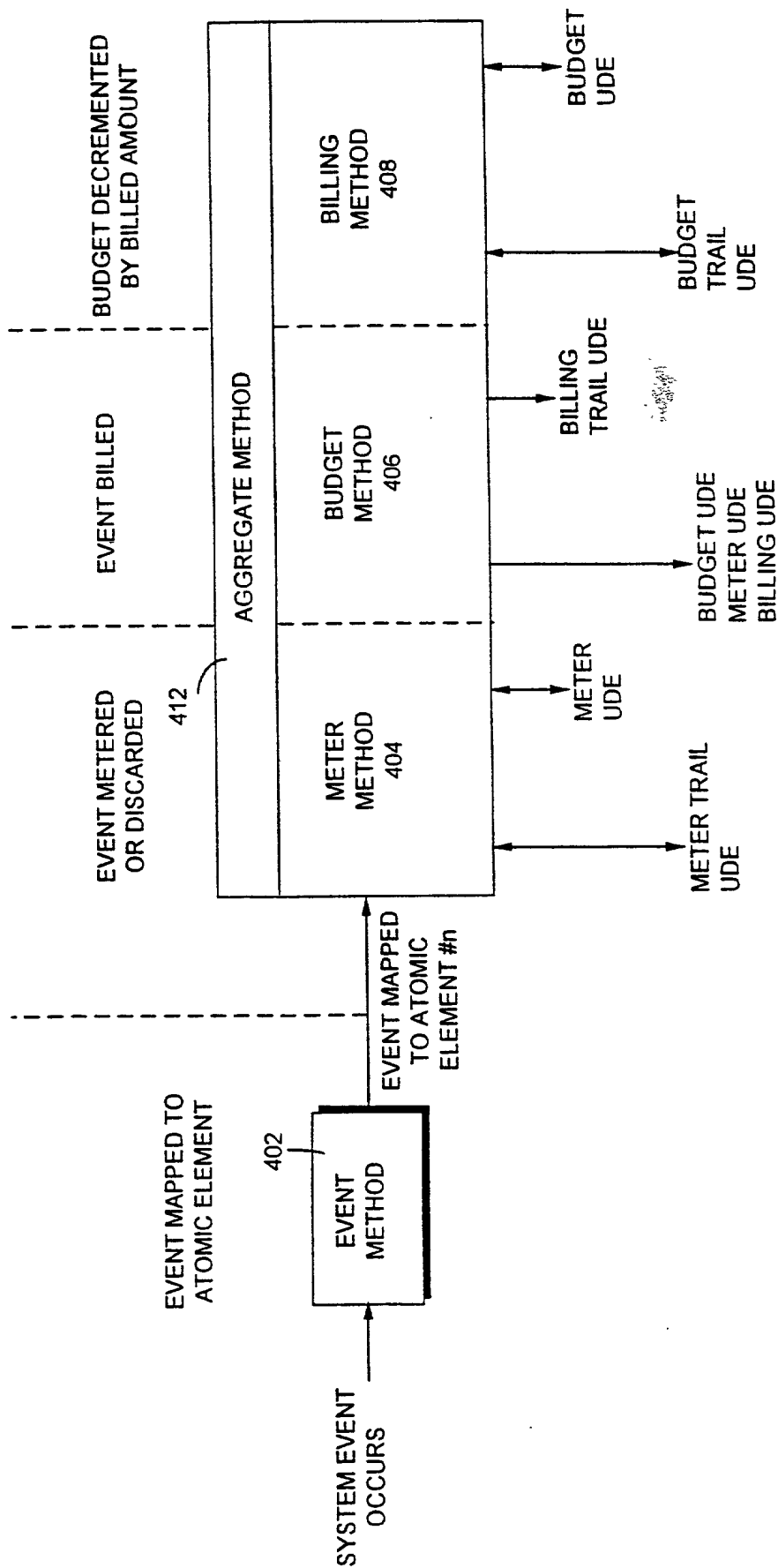
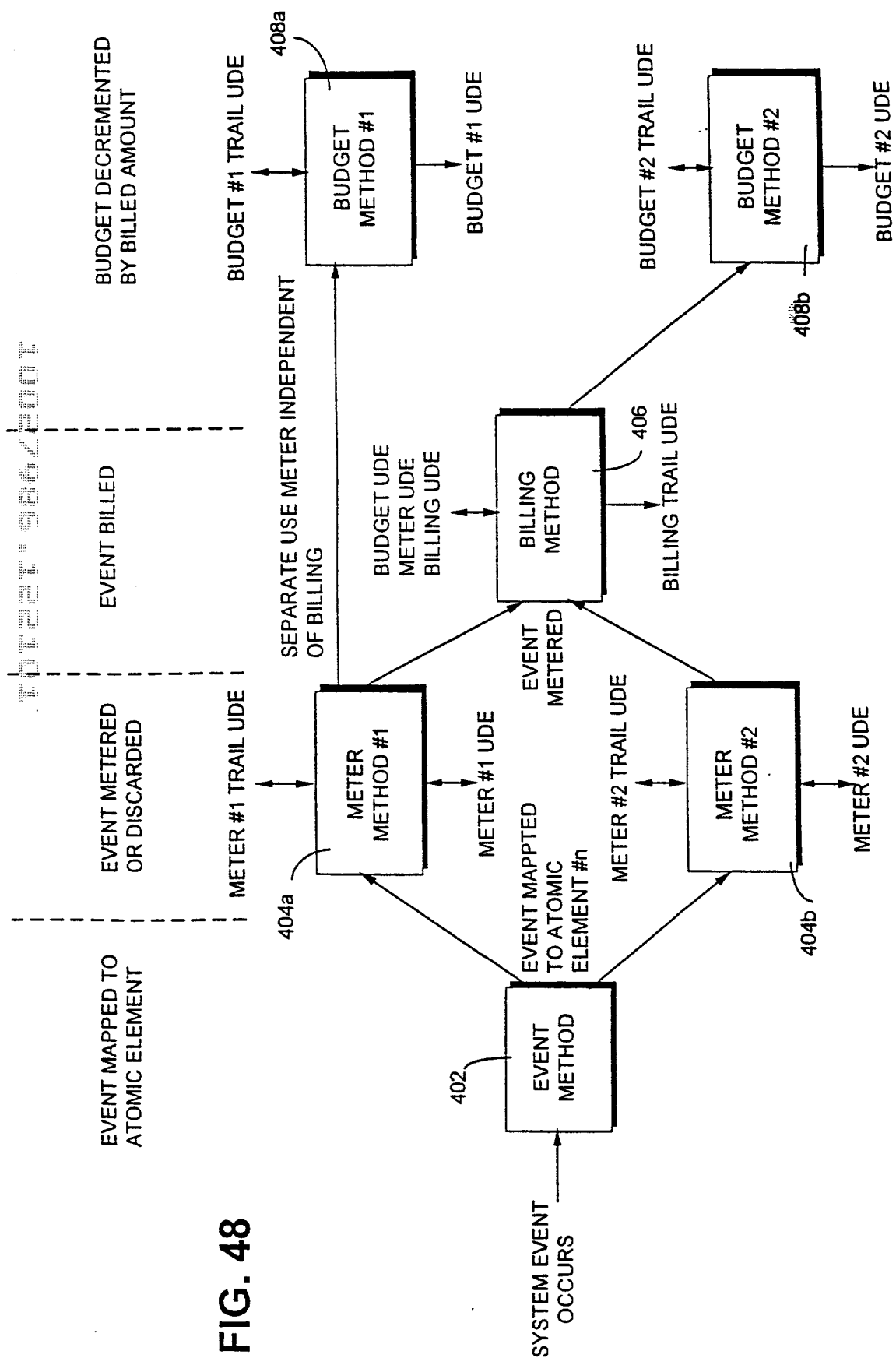


FIG. 47





# OPEN Method Use Process Flow

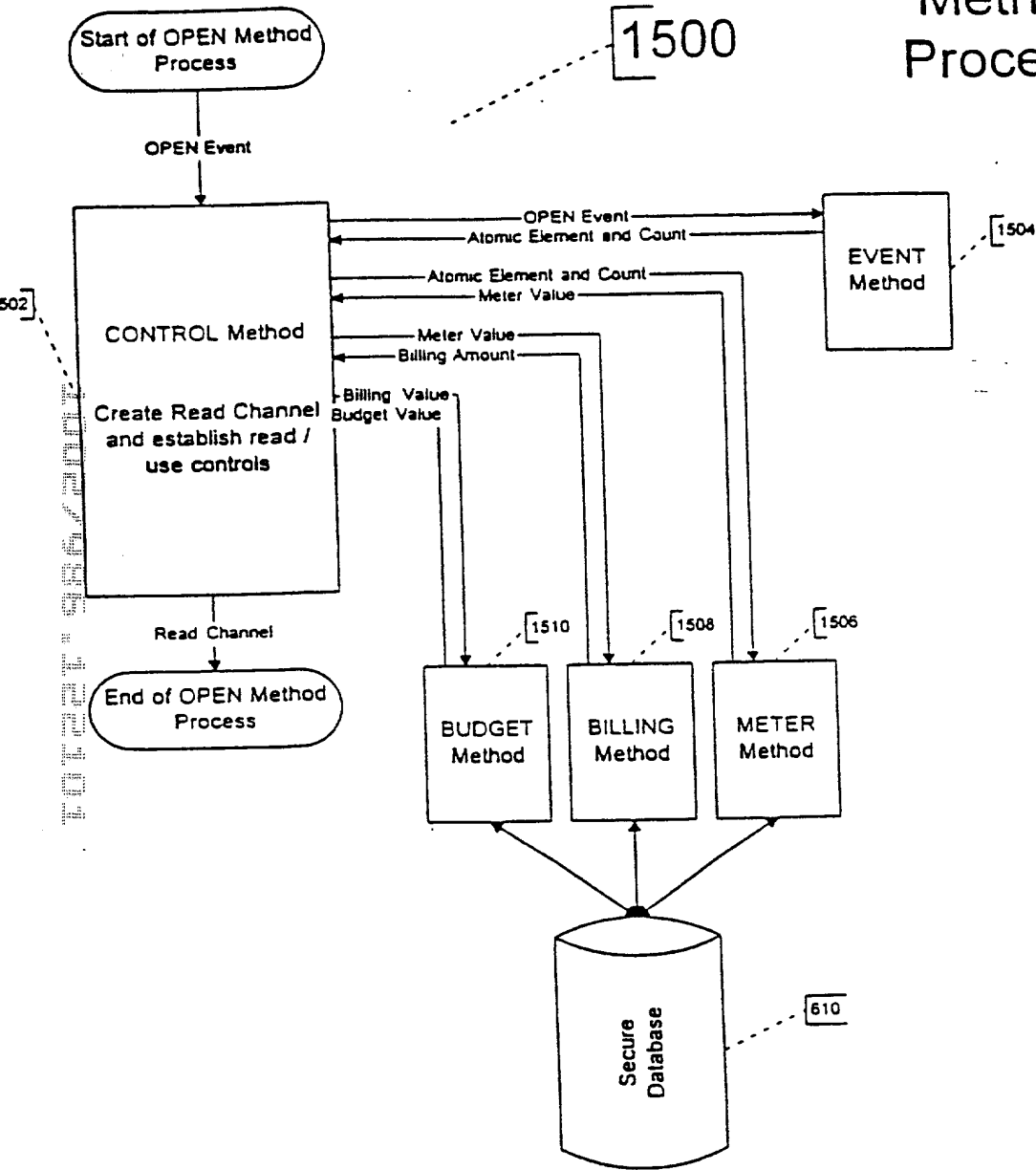


Figure 49

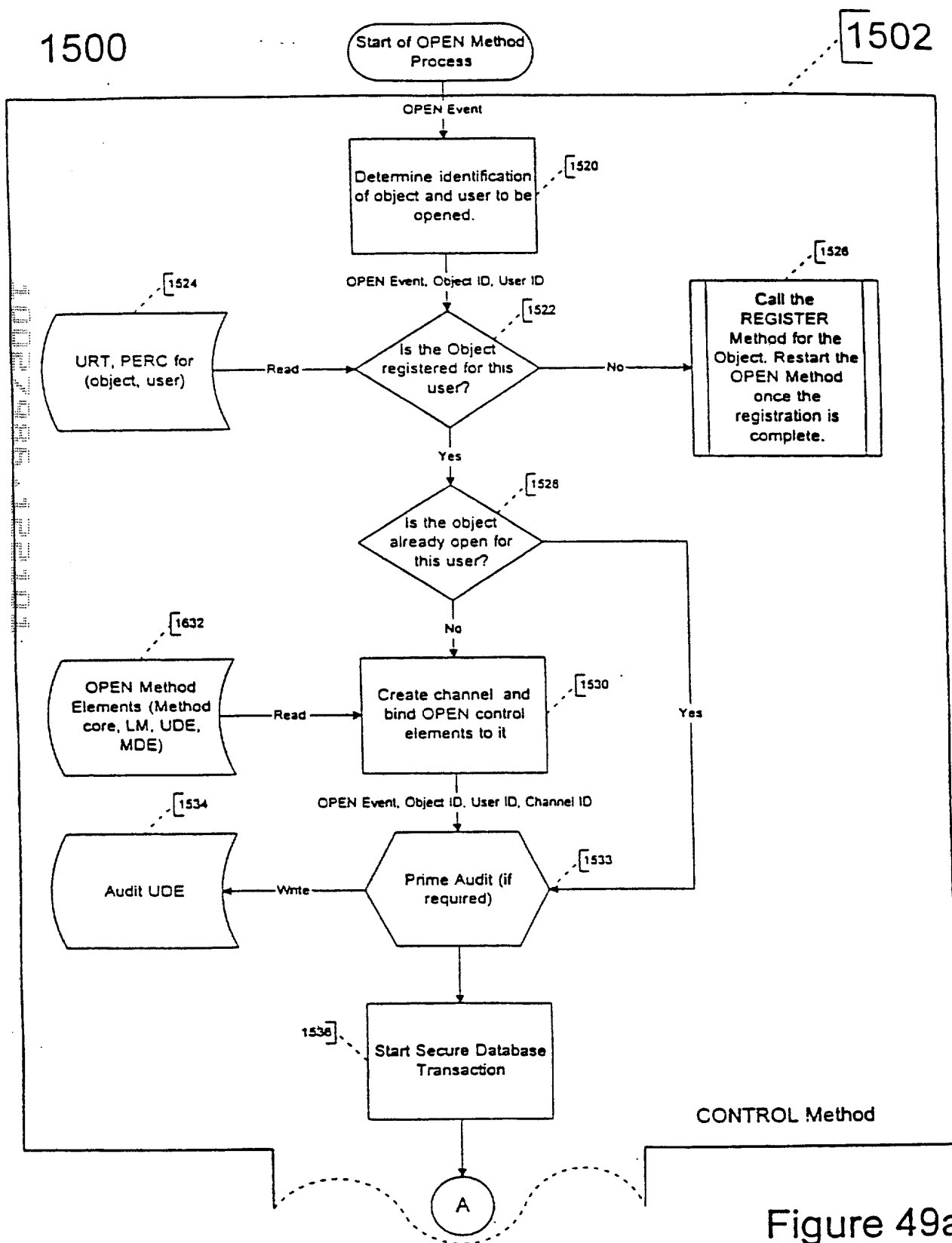


Figure 49a



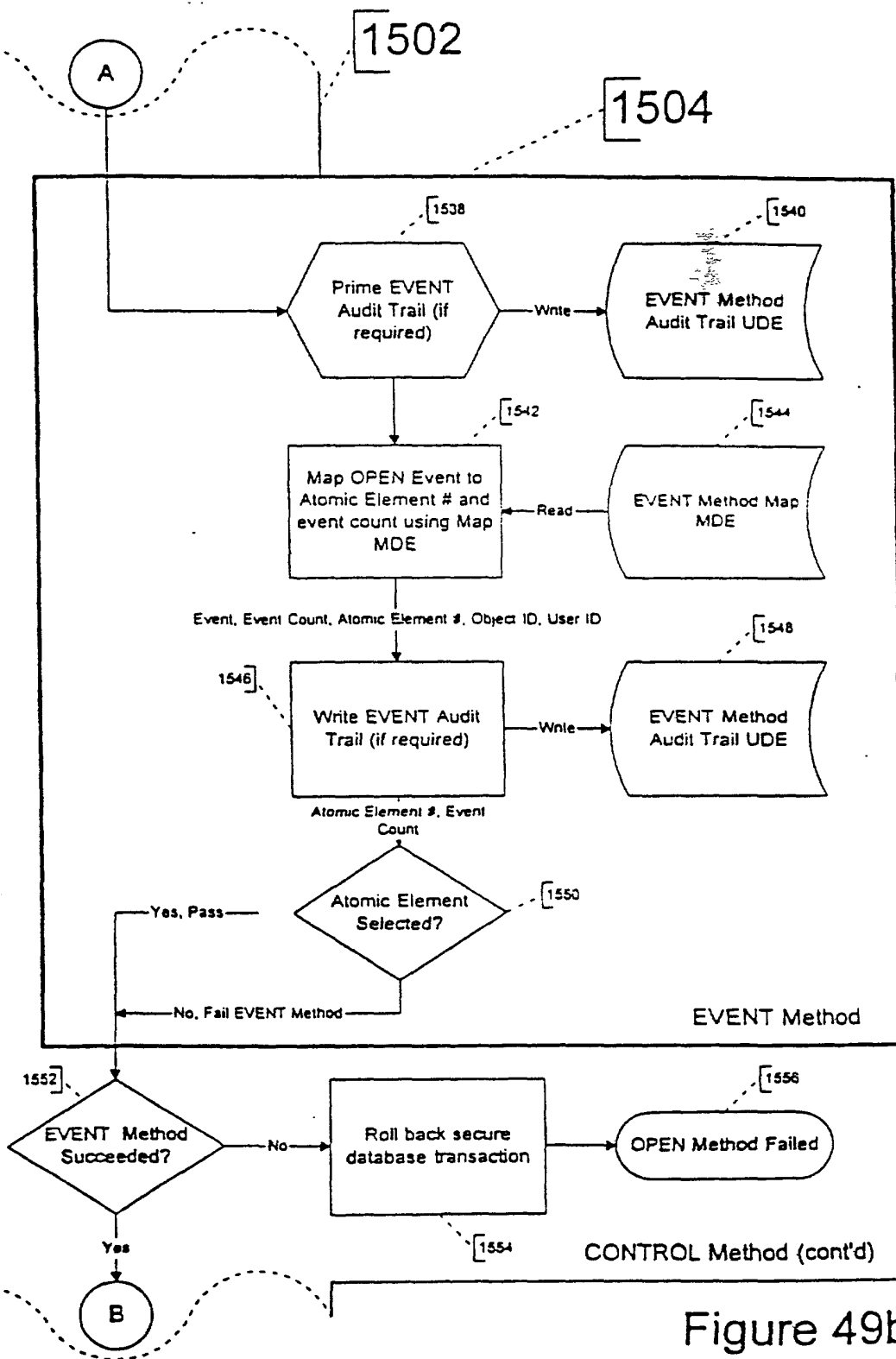


Figure 49b

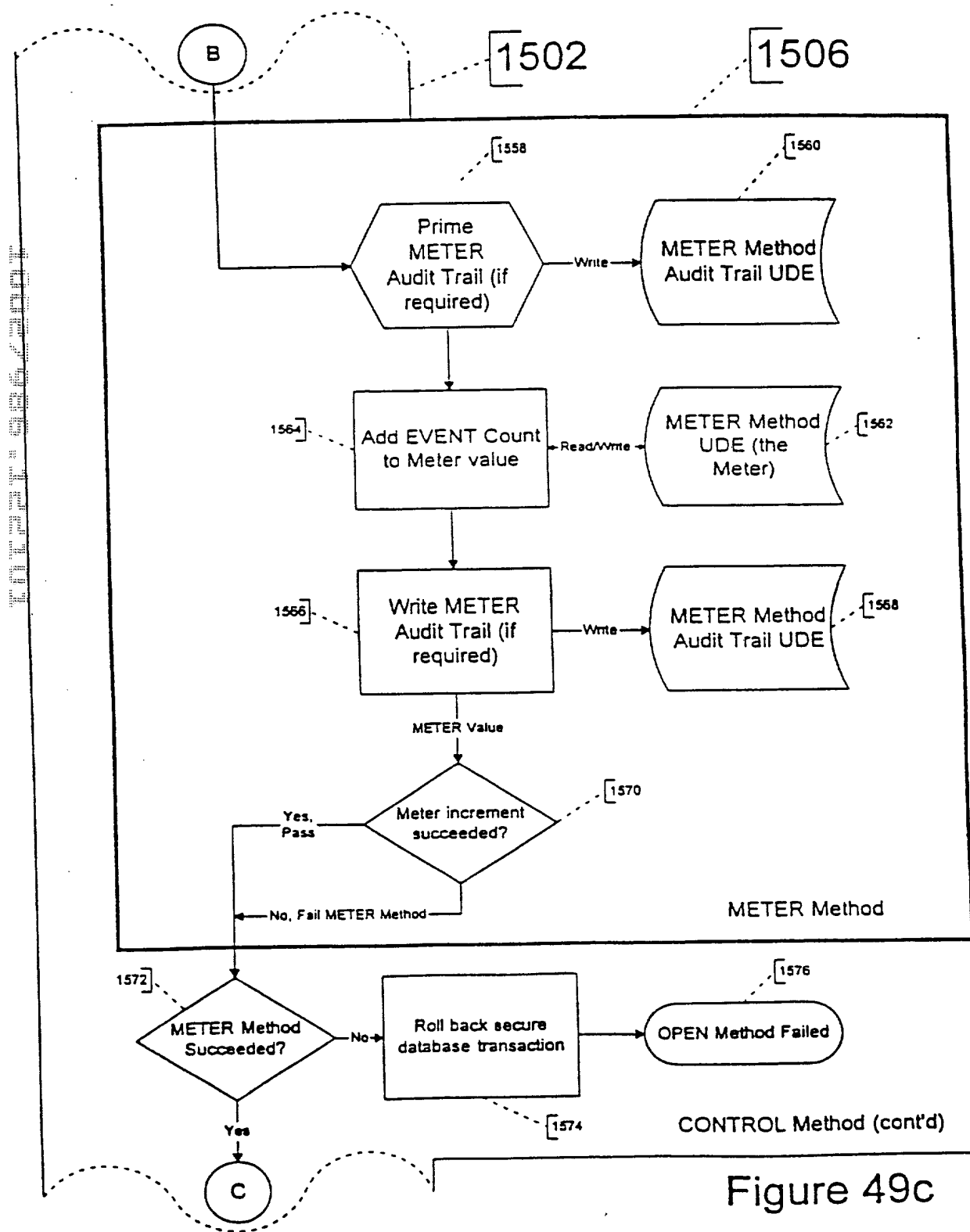


Figure 49c

10027986 122101

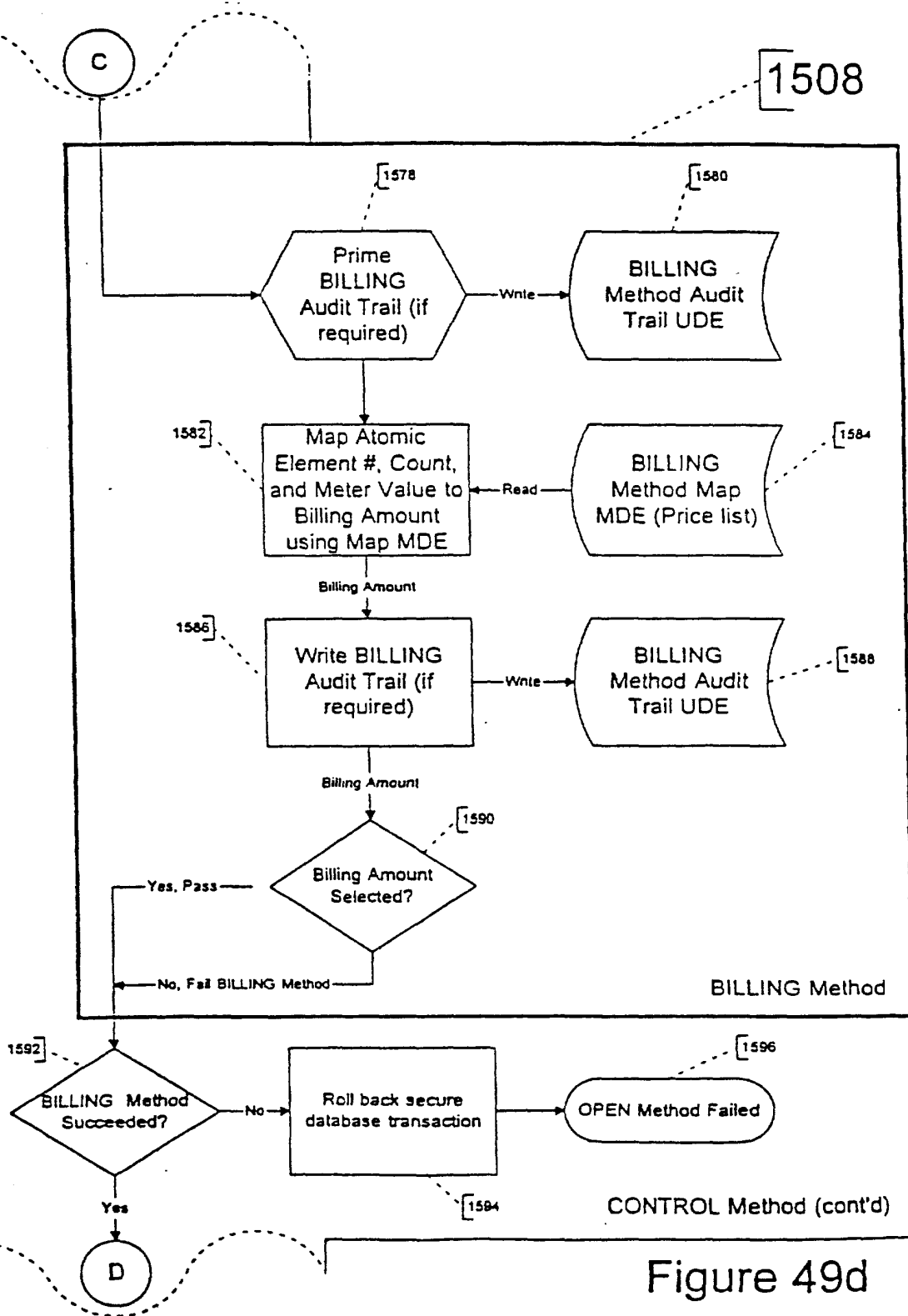


Figure 49d

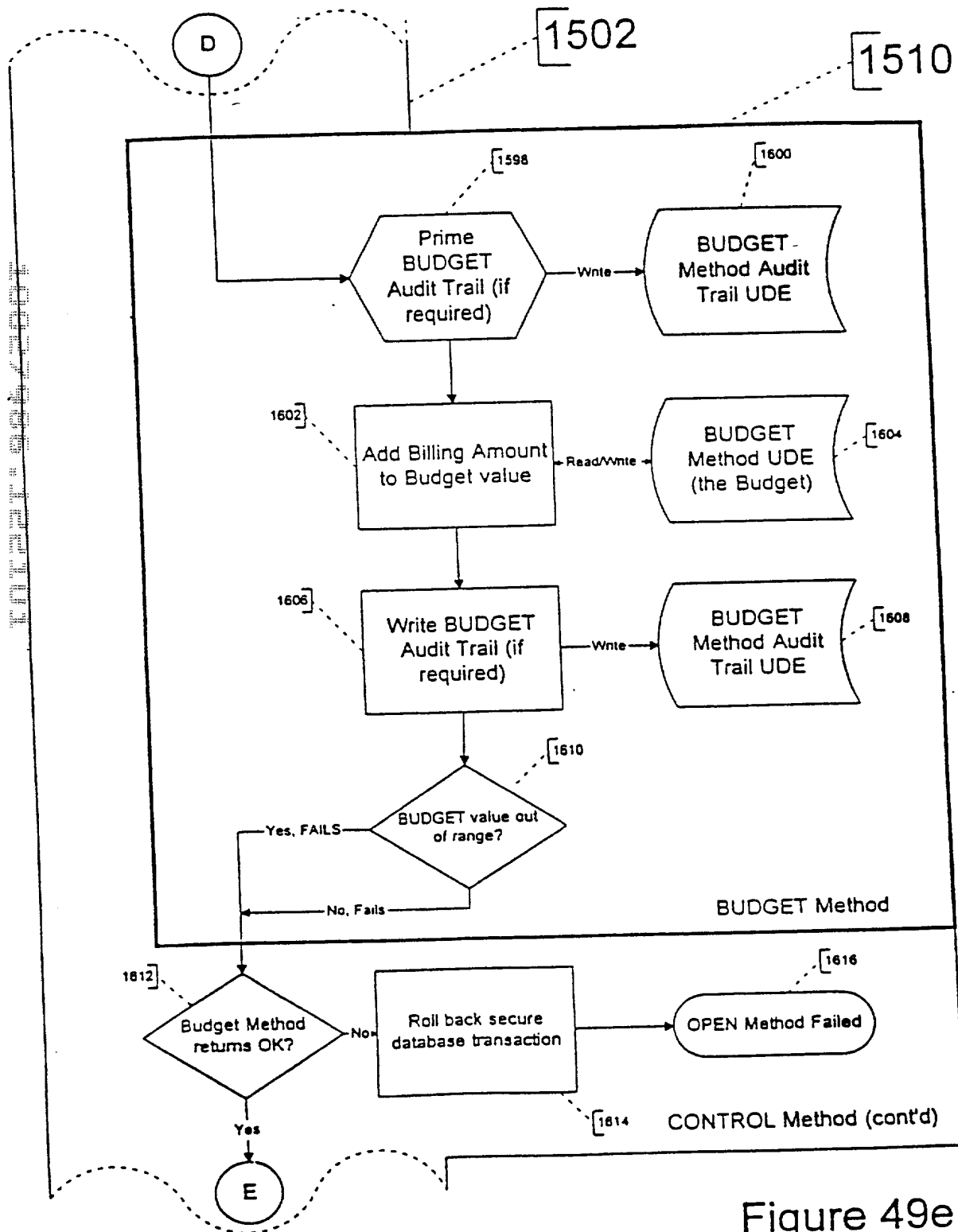


Figure 49e

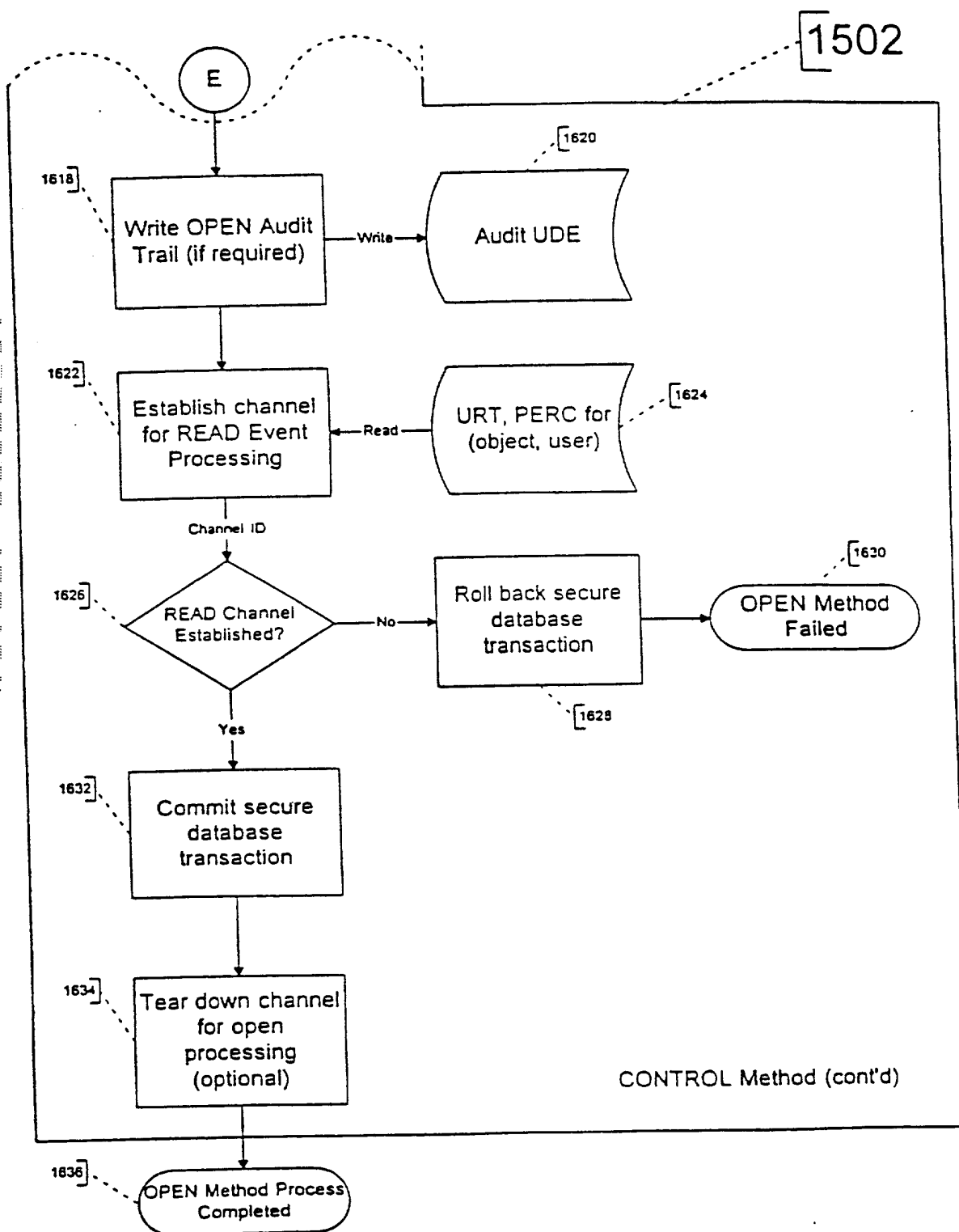


Figure 49f

# READ Method Use Process Flow

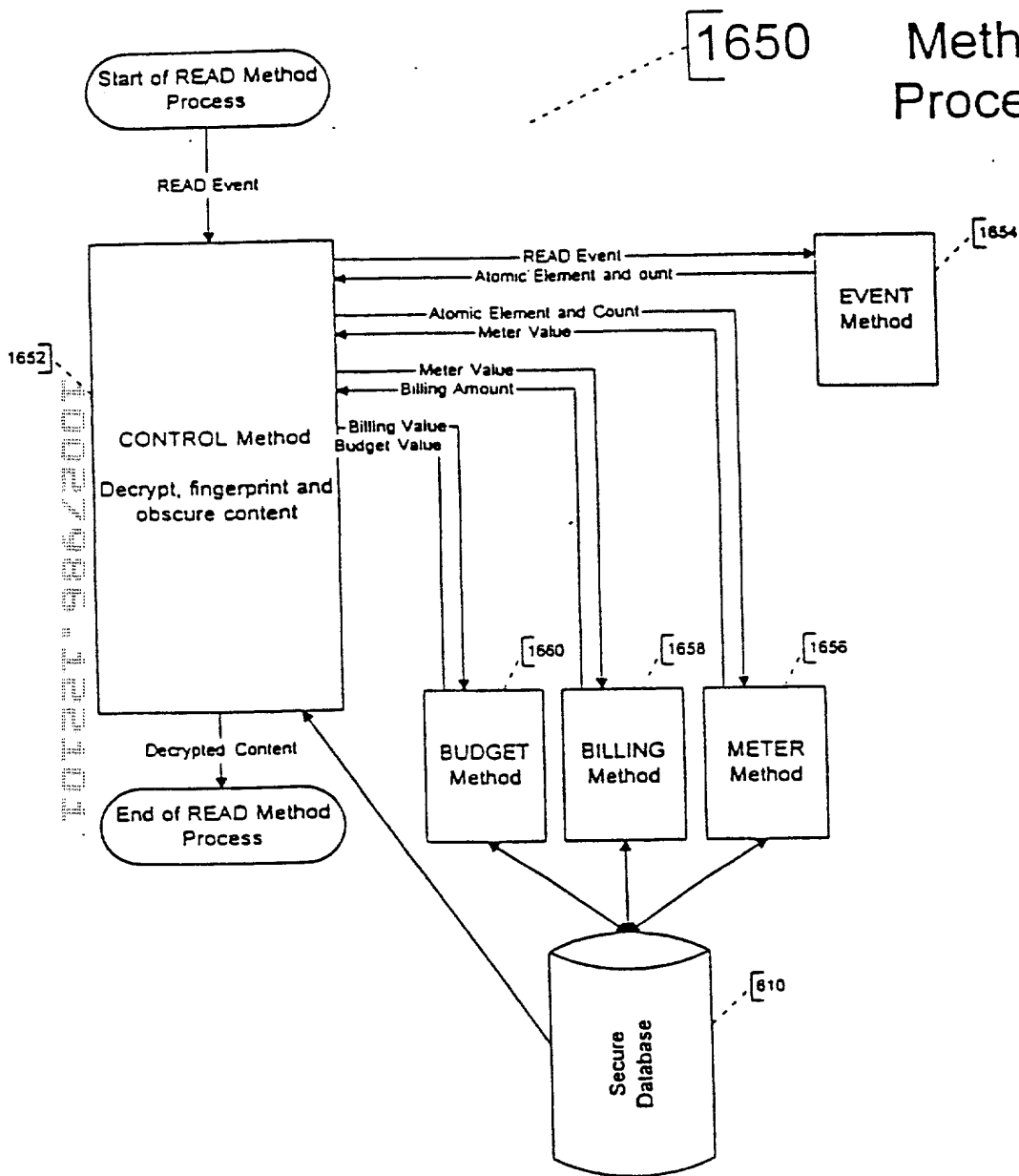


Figure 50

1650

10027986 12210

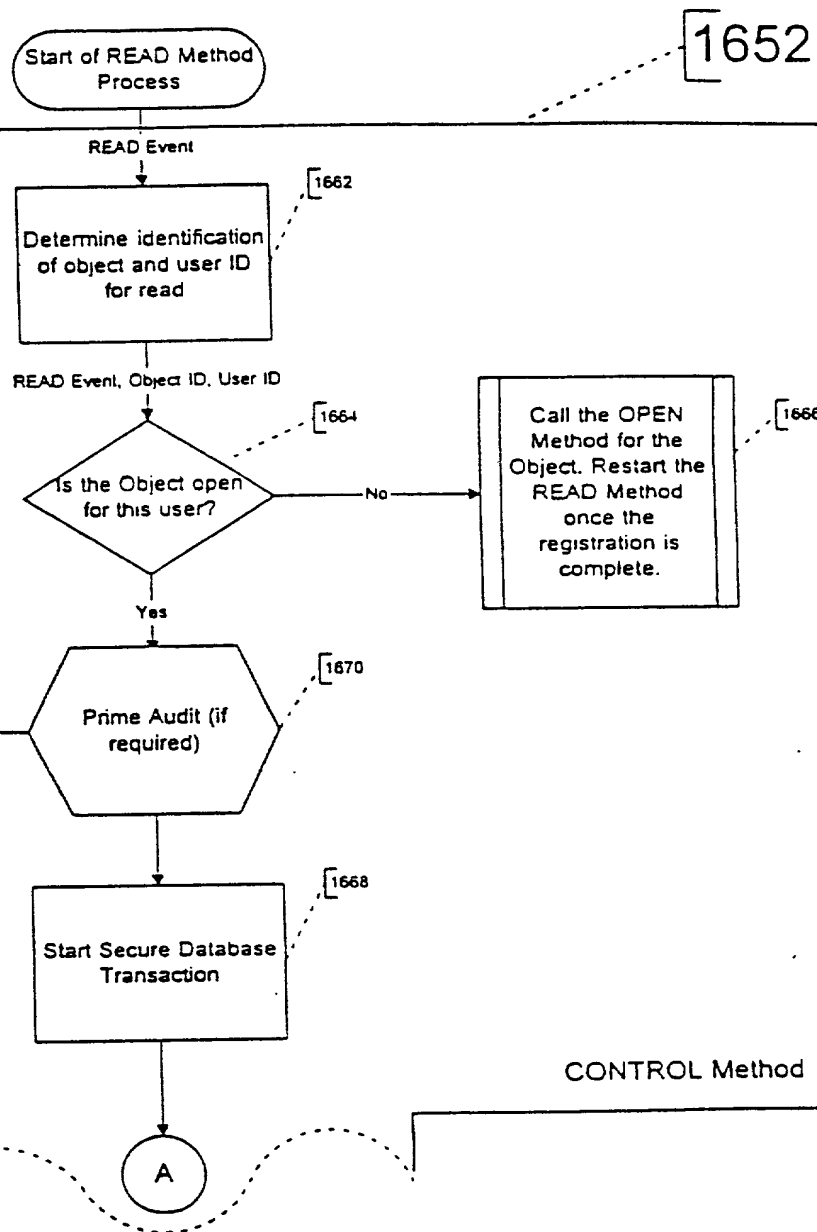


Figure 50a

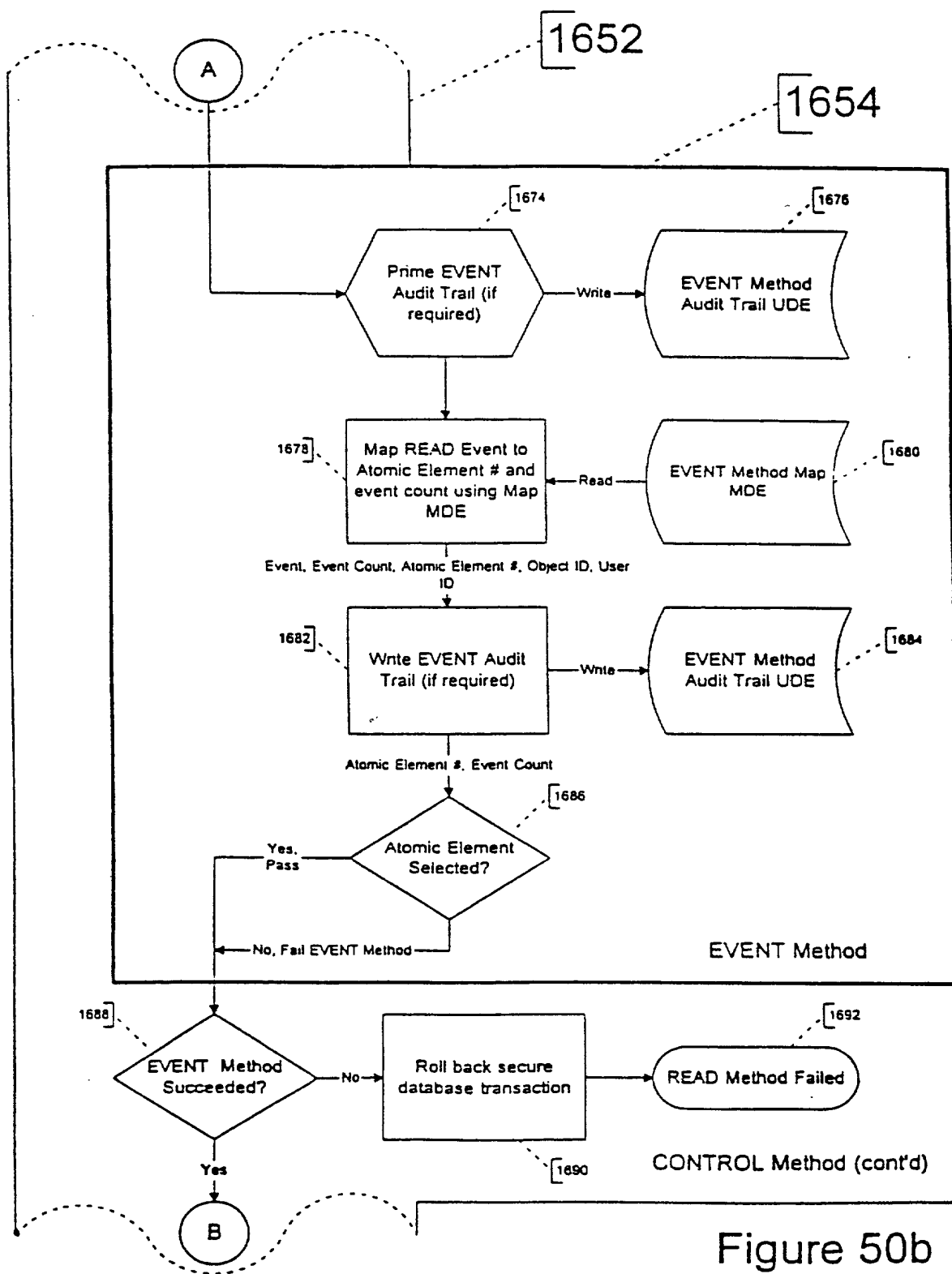


Figure 50b



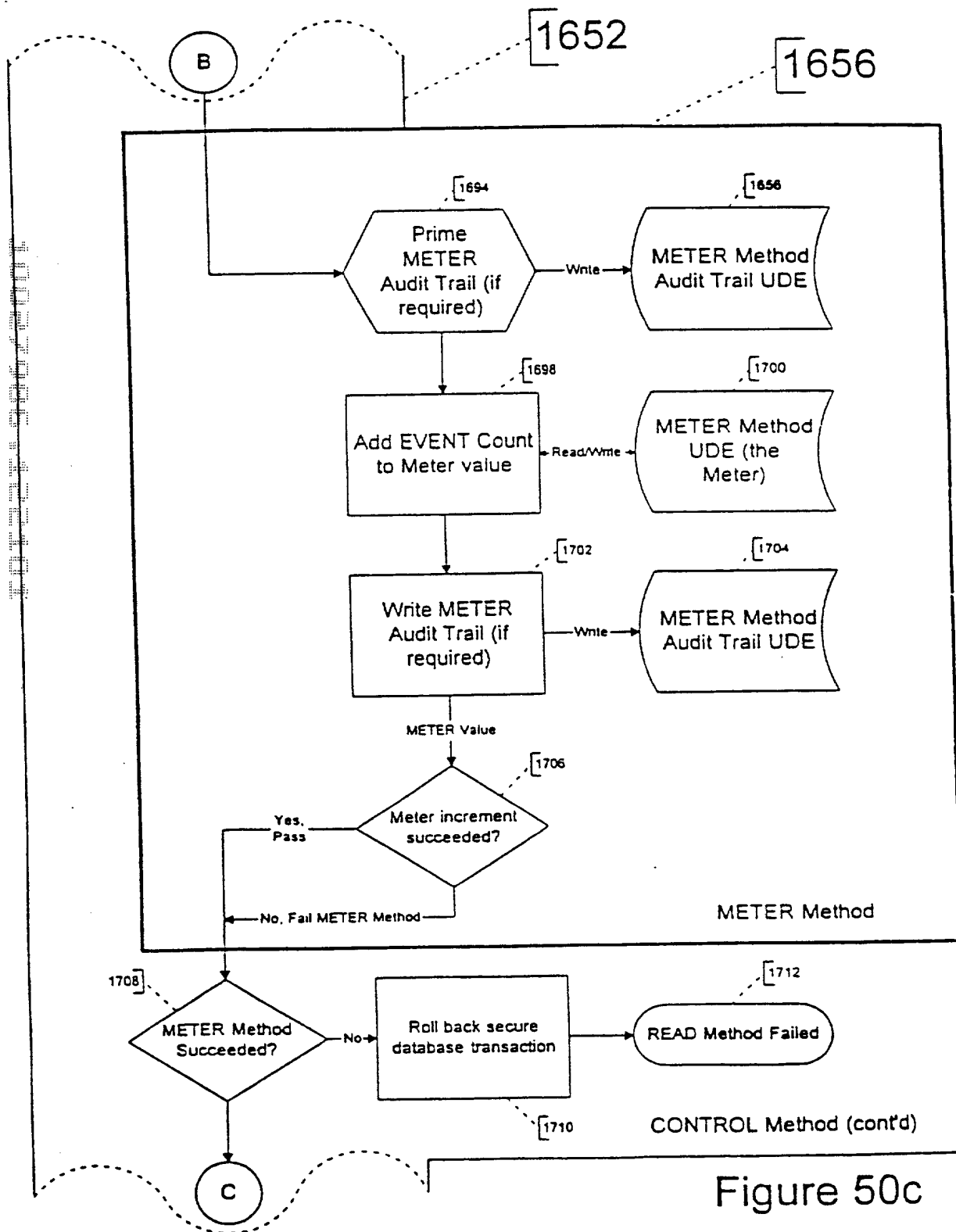


Figure 50c

10027986 12210  
Total 9862200

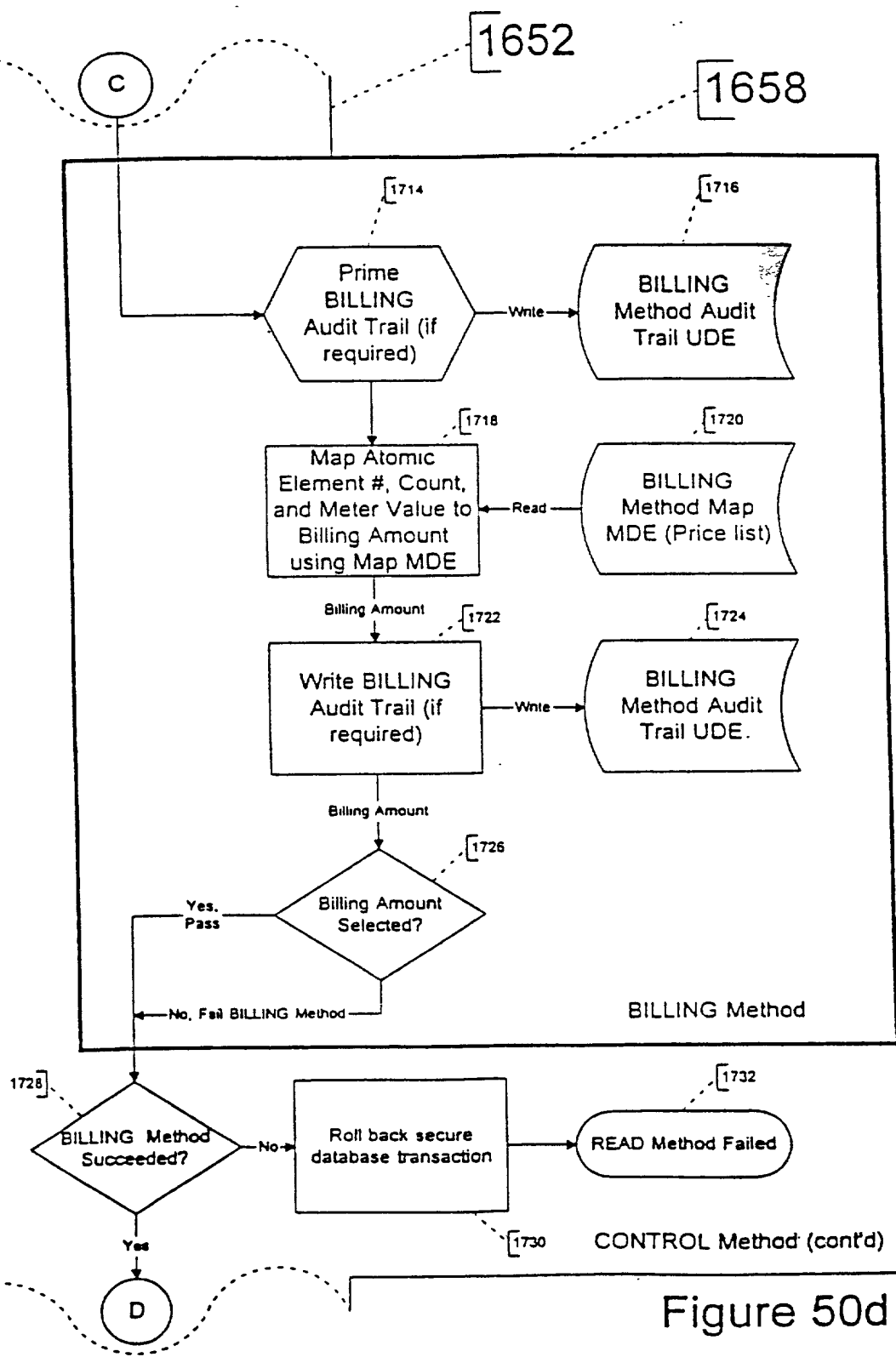


Figure 50d

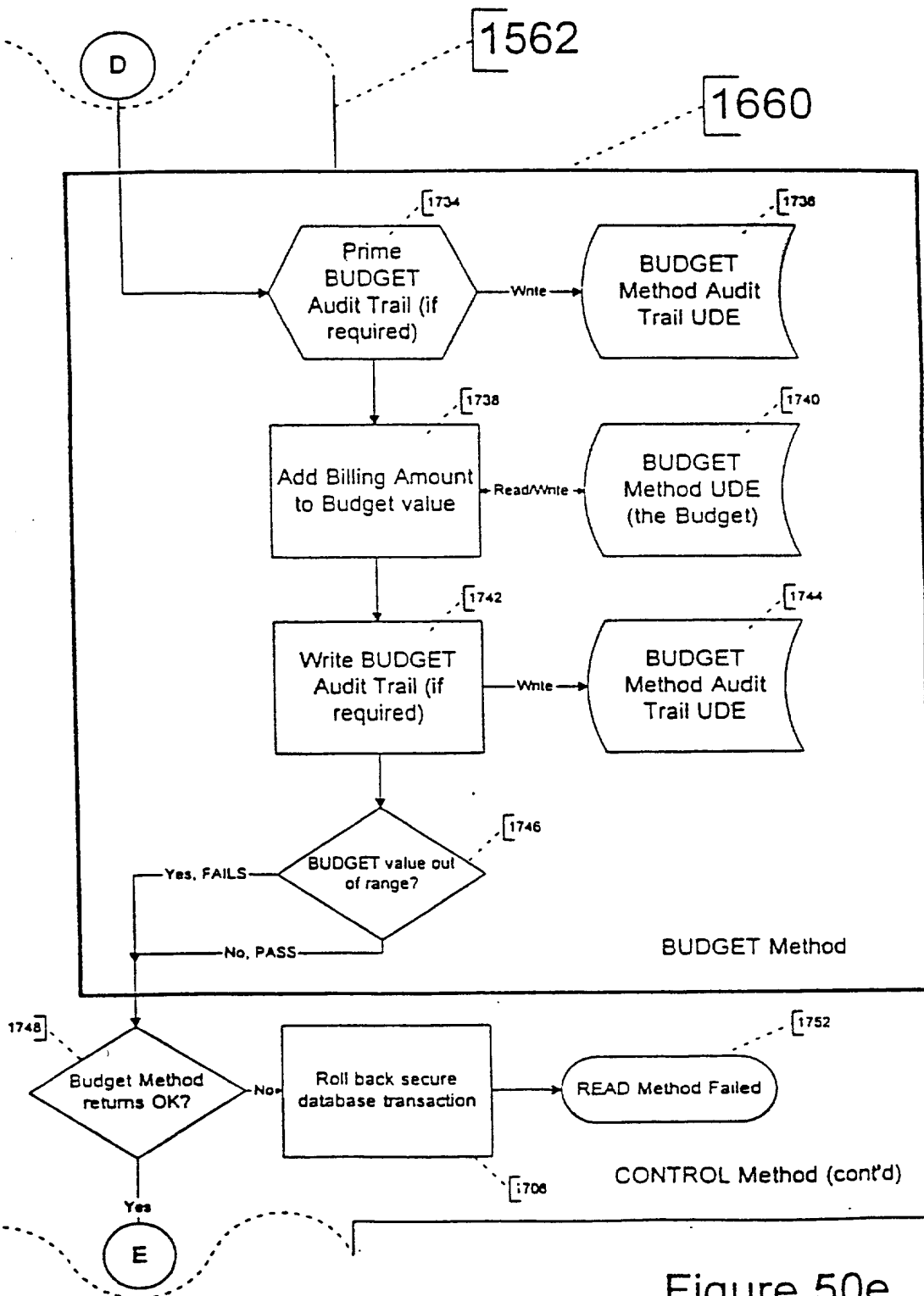
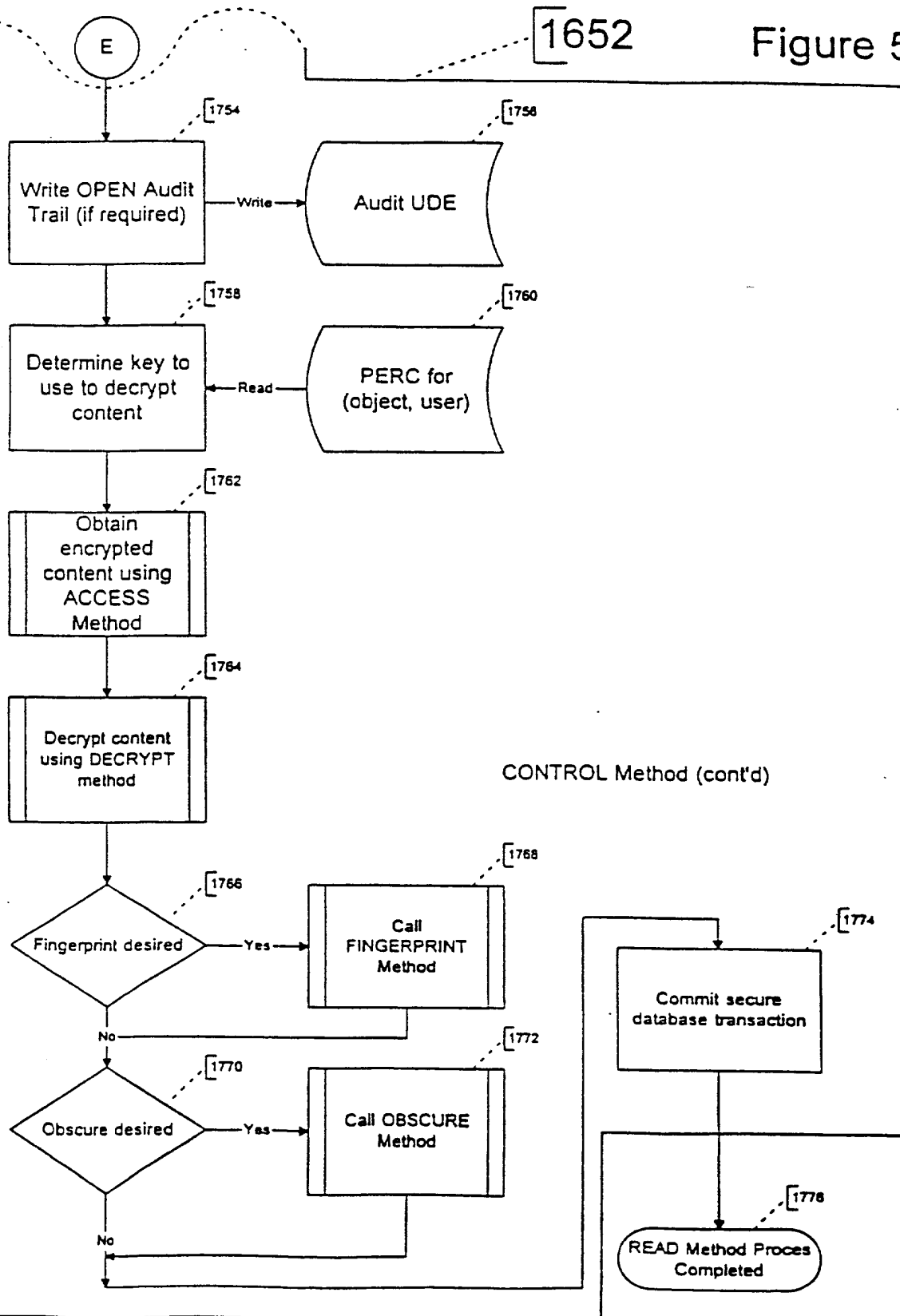


Figure 50e

10027986 12210  
TOTAL 986201

1652

Figure 50f



# WRITE Method Use Process Flow

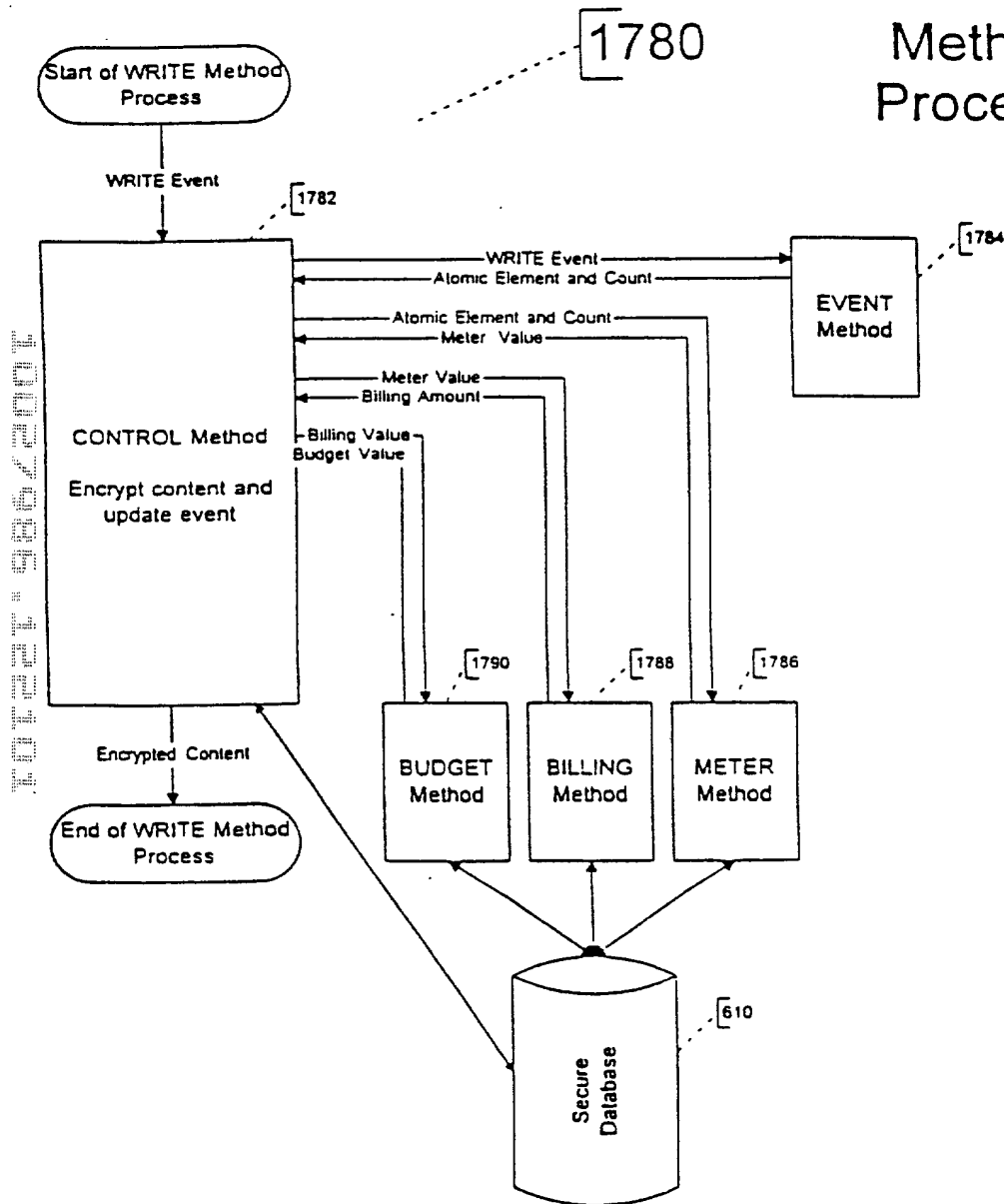


Figure 51

1780

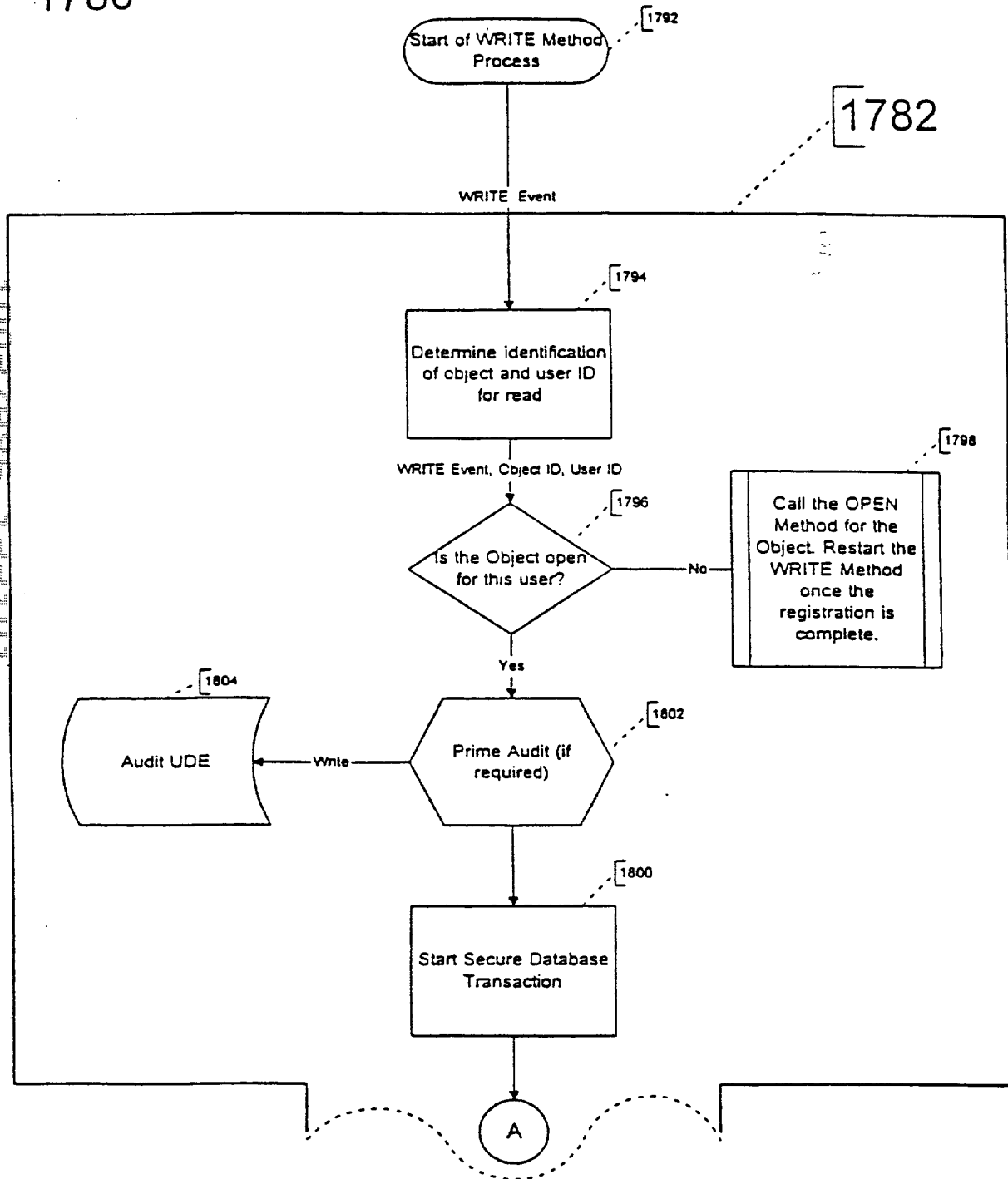


Figure 51a

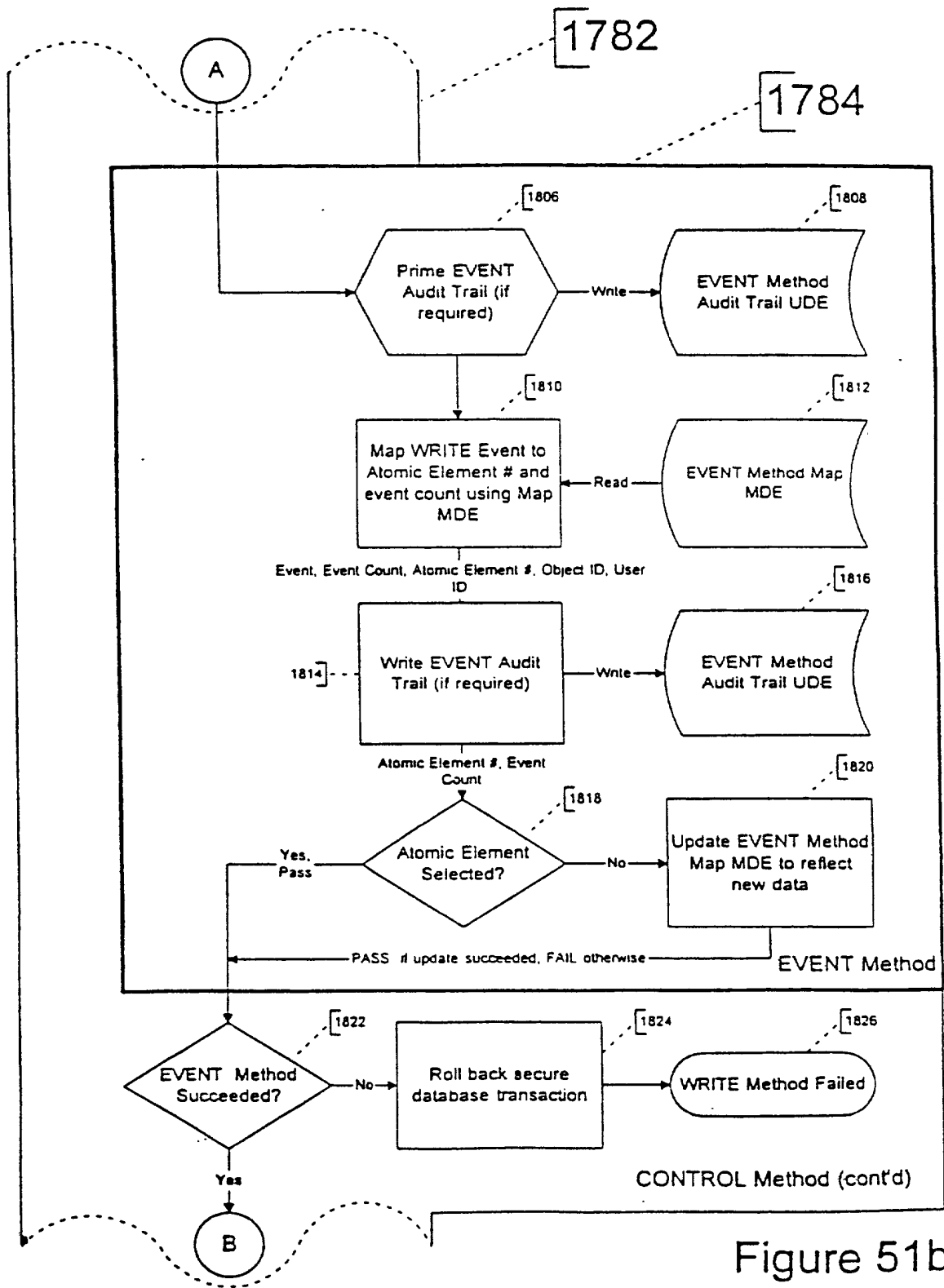


Figure 51b

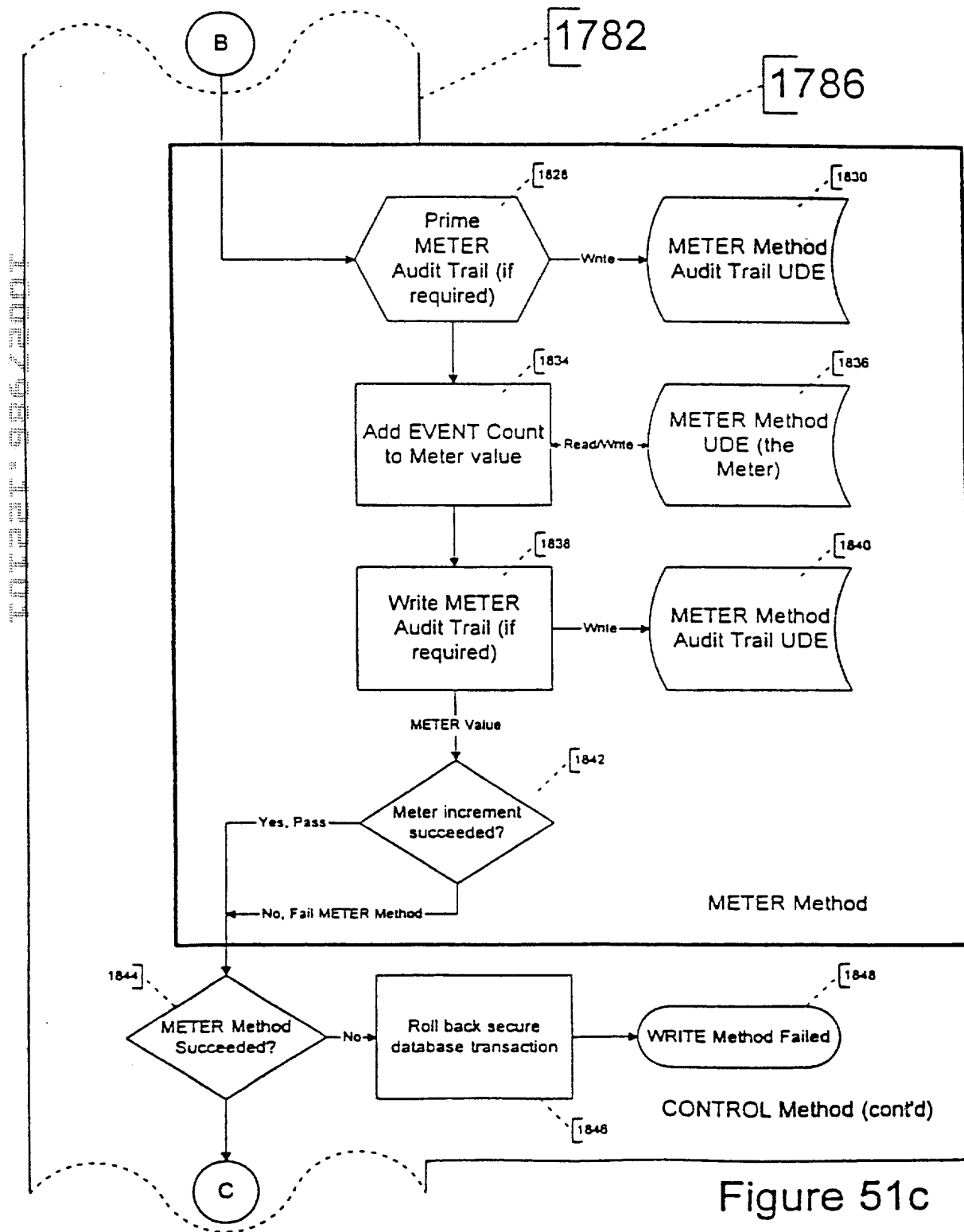


Figure 51c



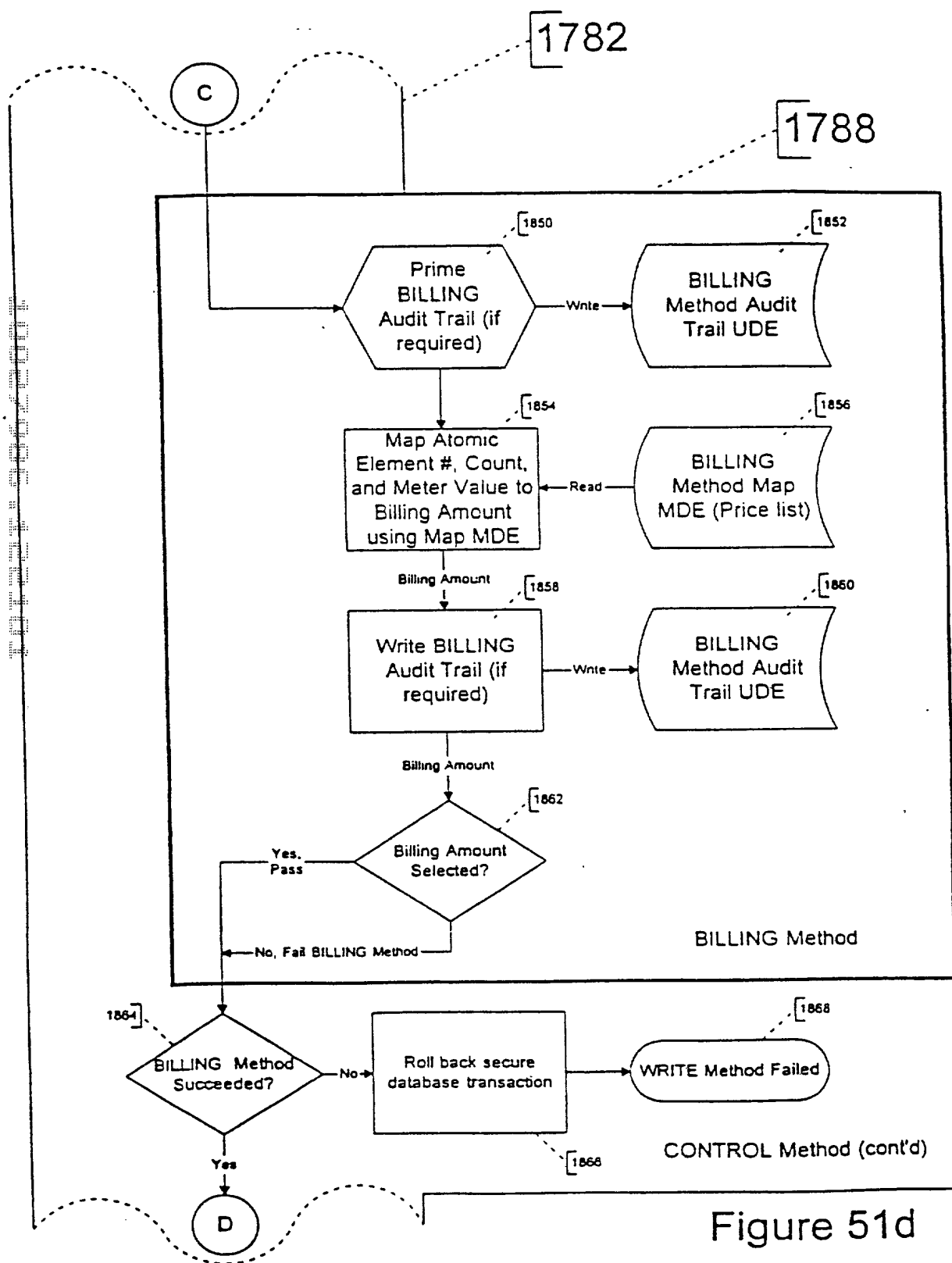


Figure 51d

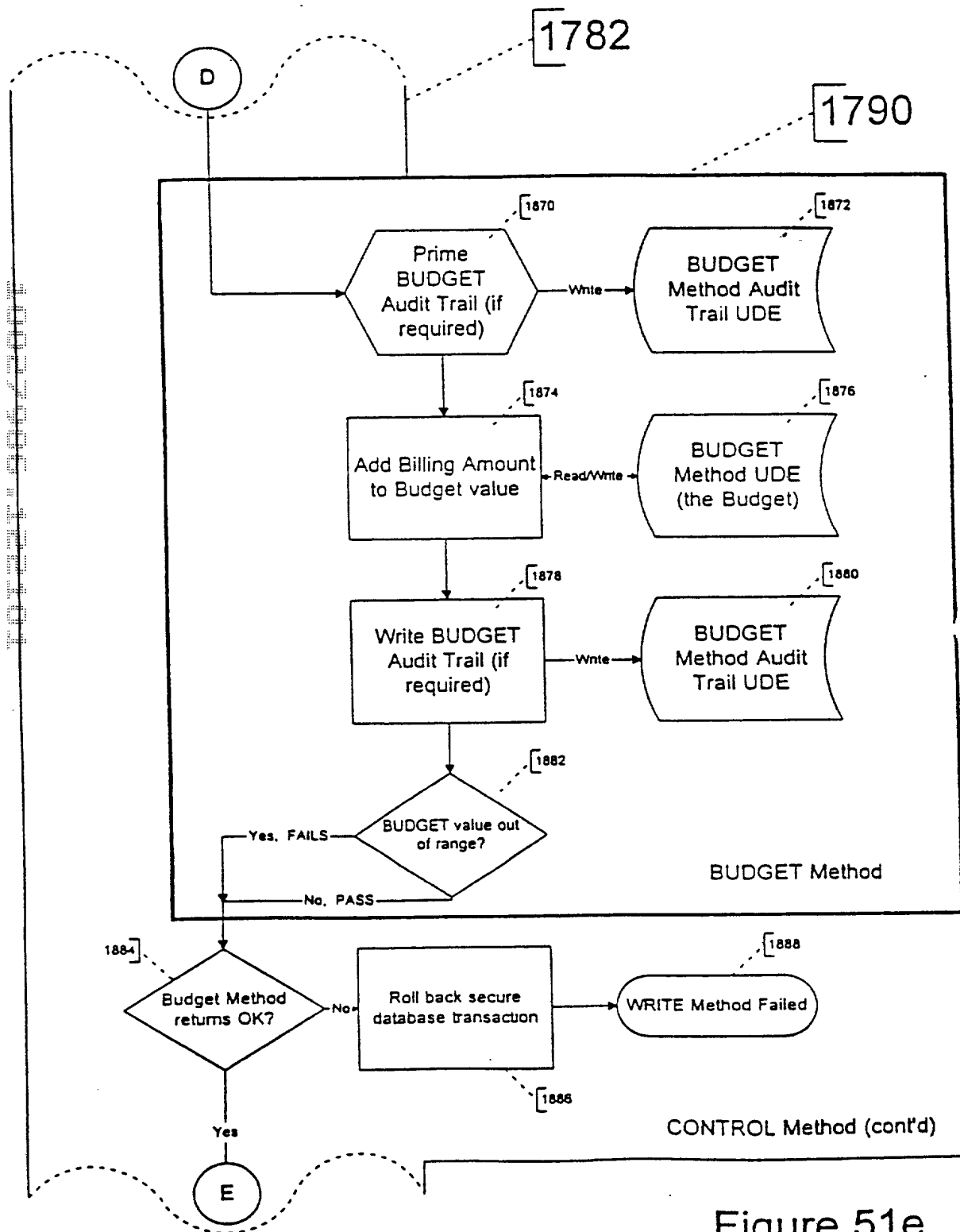


Figure 51e

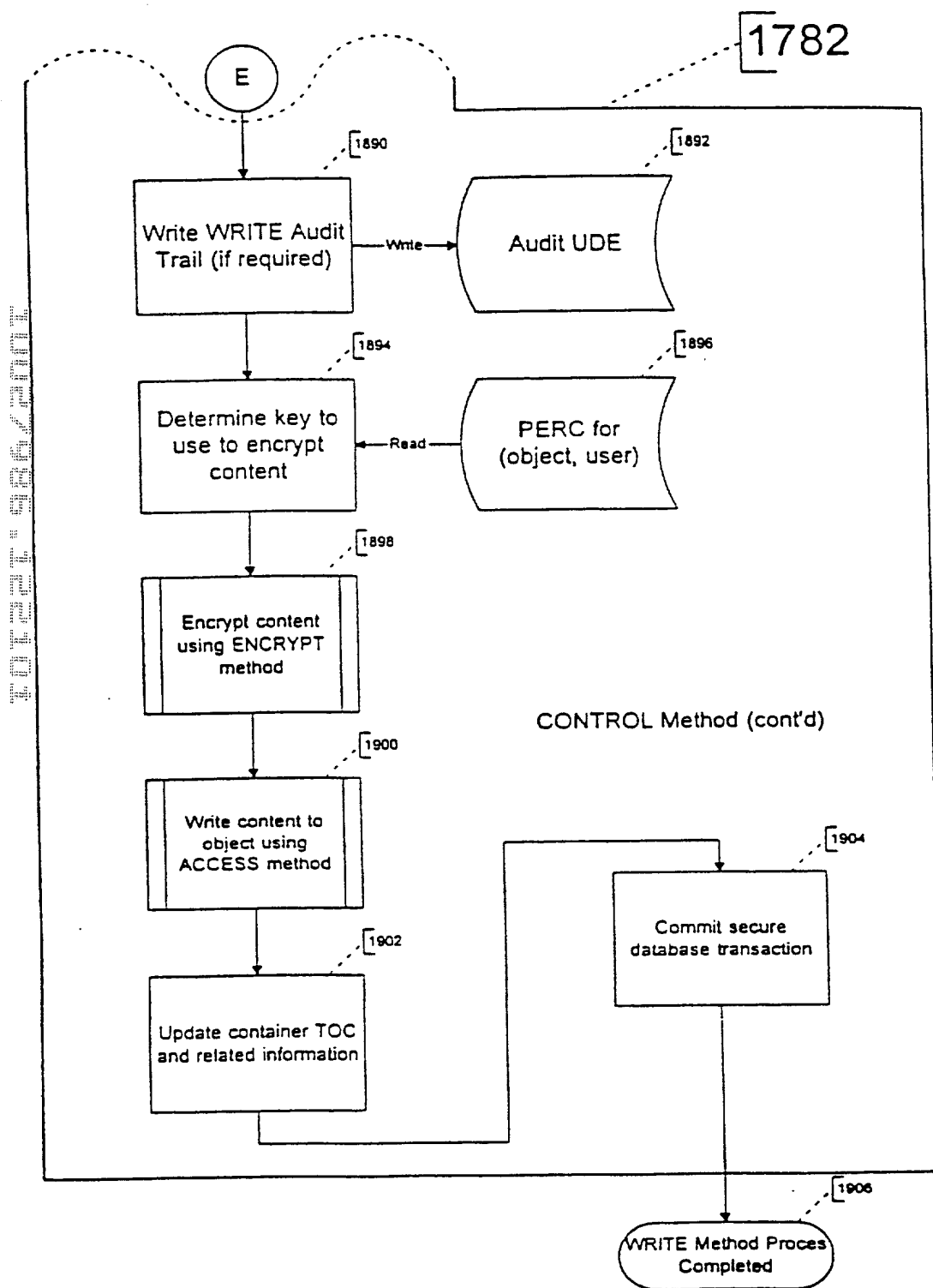


Figure 51f

1920

# CLOSE Method Process Flow

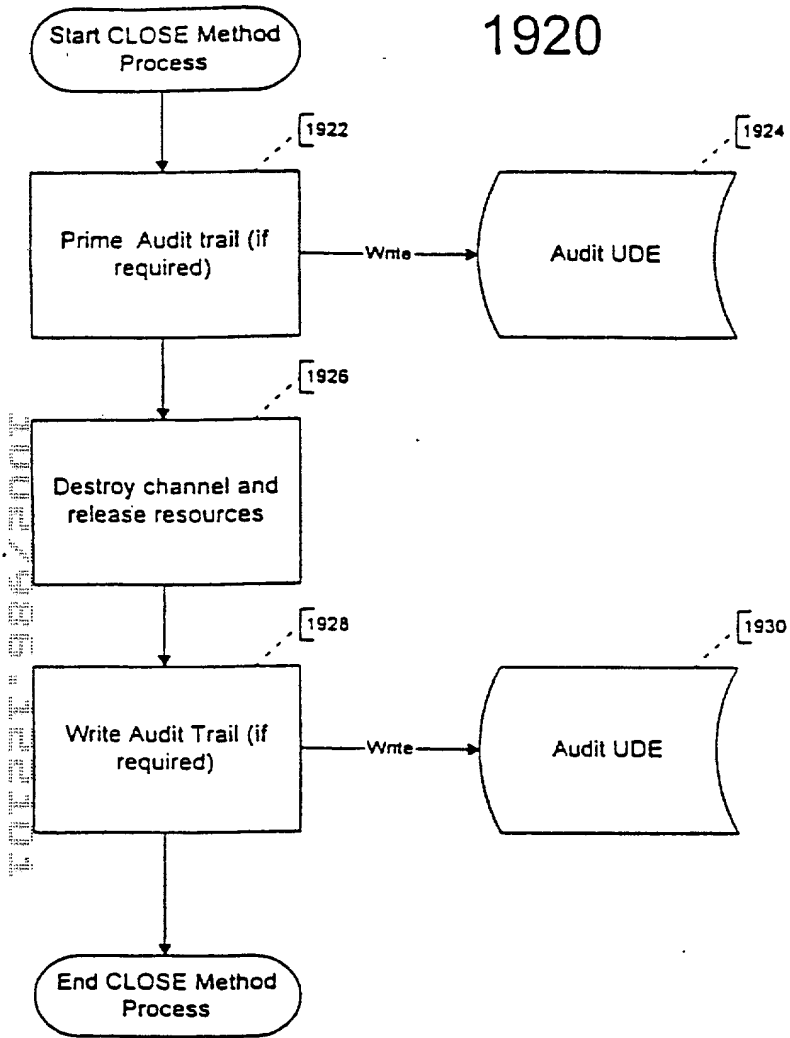


Figure 52

# EVENT Method Process Flows

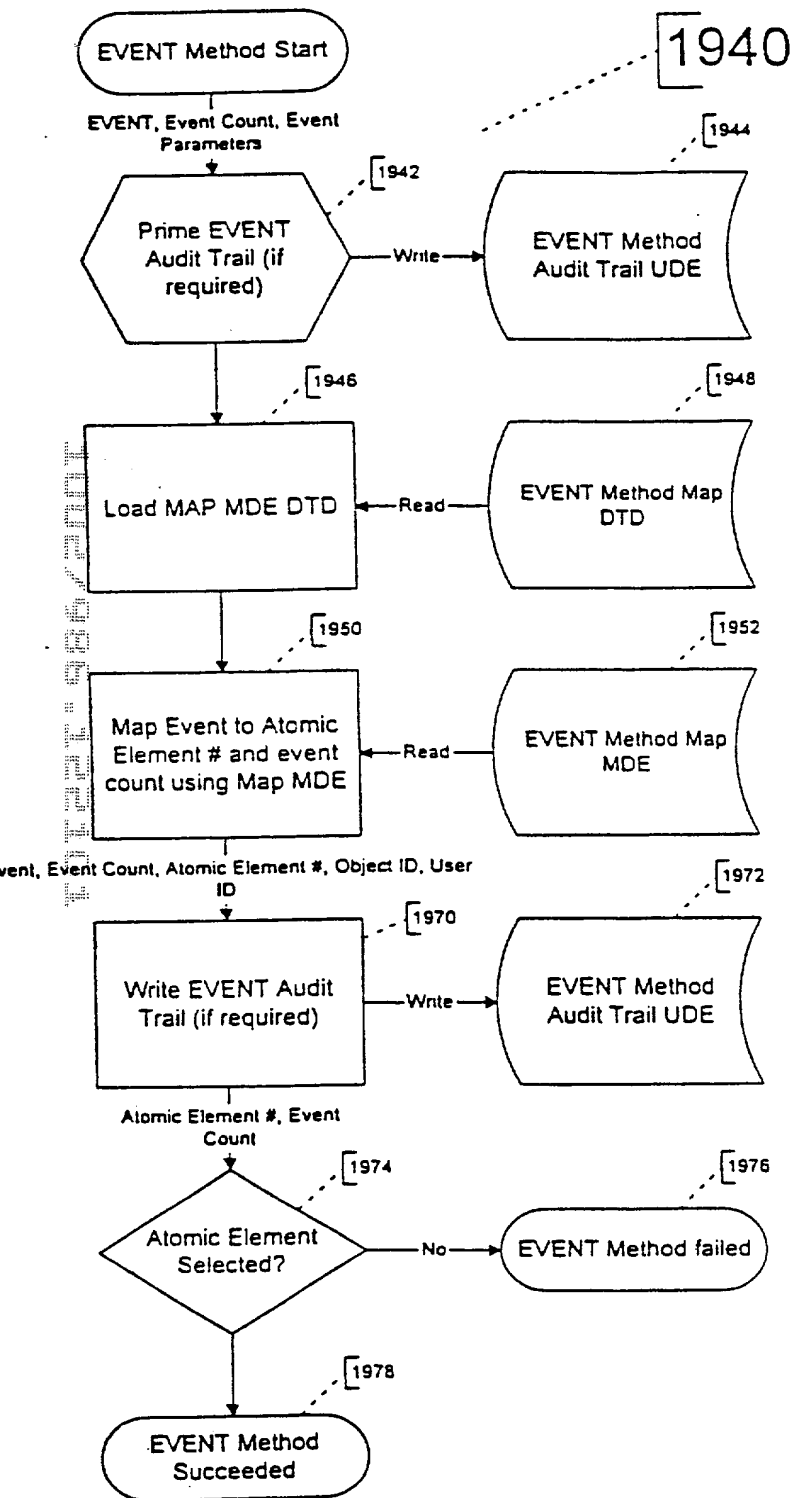


Figure 53a

# Sample EVENT Method Mapping Process

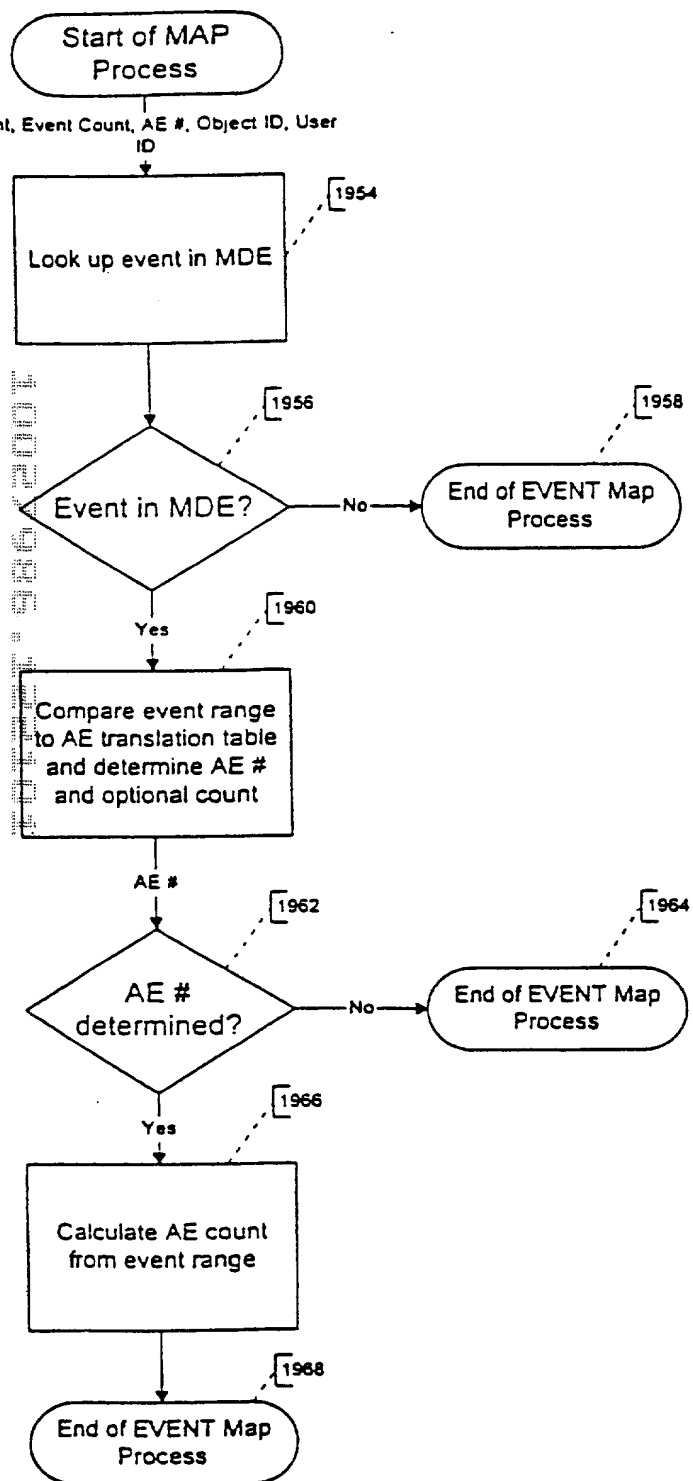
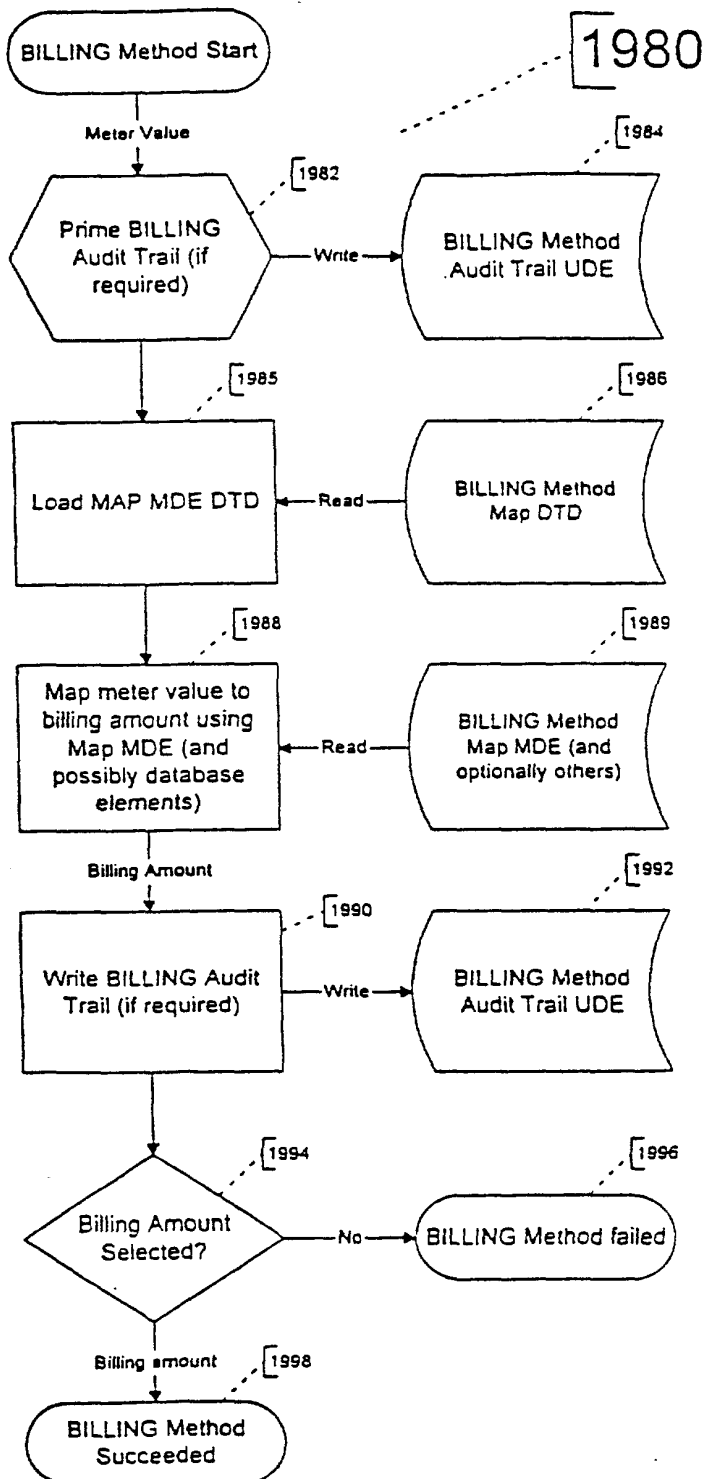


Figure 53b

70027986 122104



# BILLING Method Process Flows

Figure 53c

10027926-12301

# ACCESS Method Process Flow

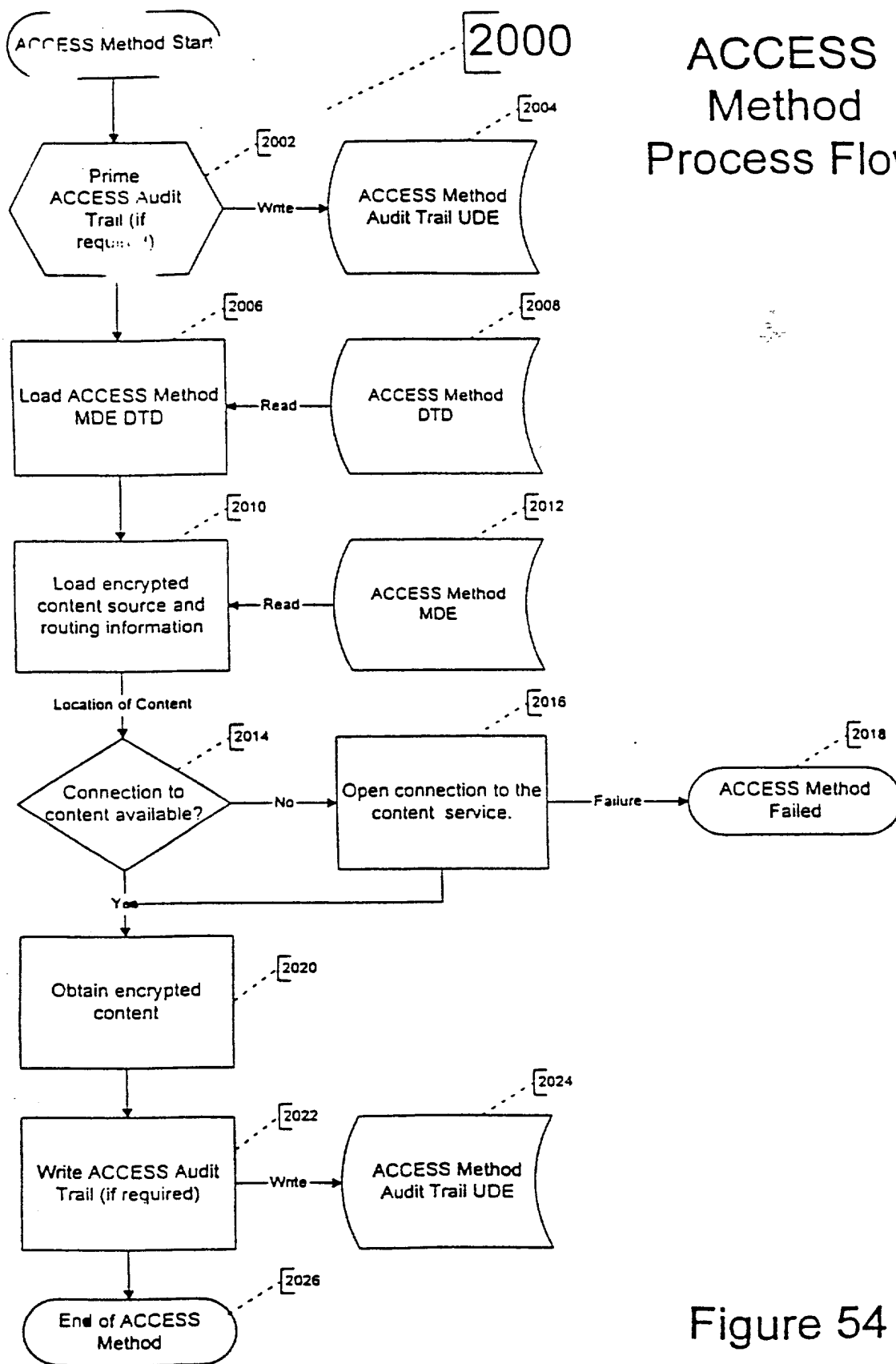


Figure 54



# DECRYPT Method Process Flow

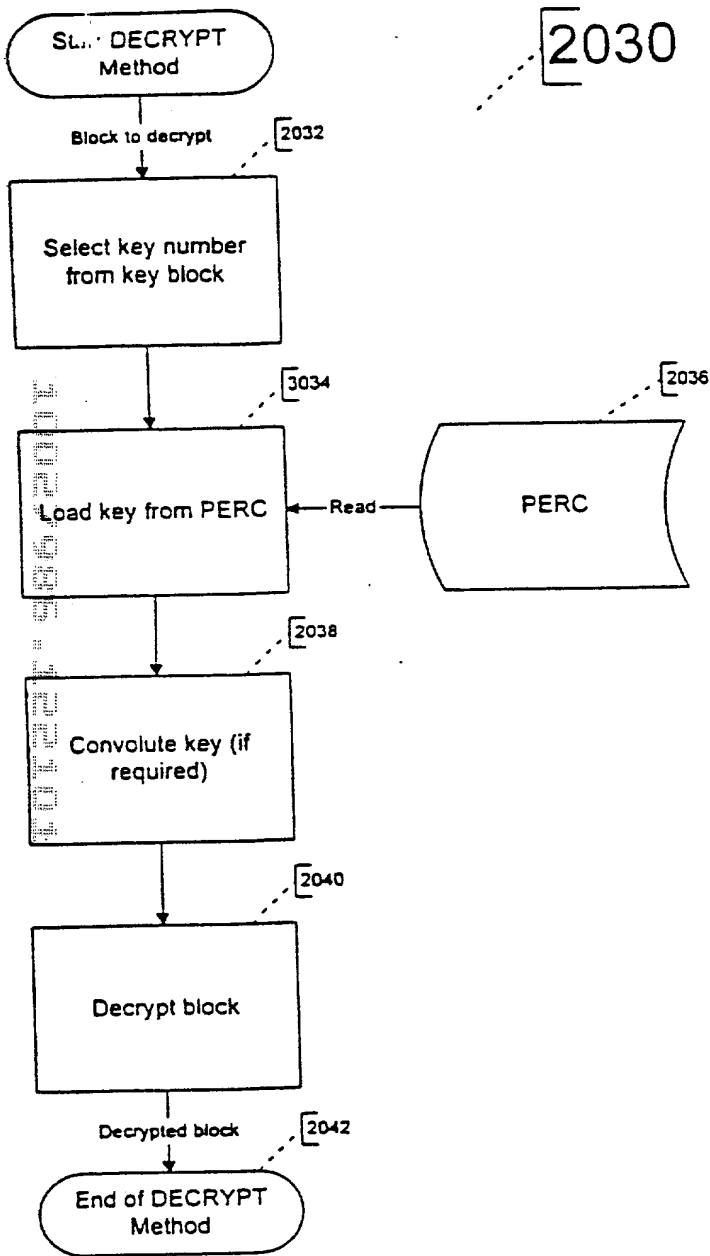
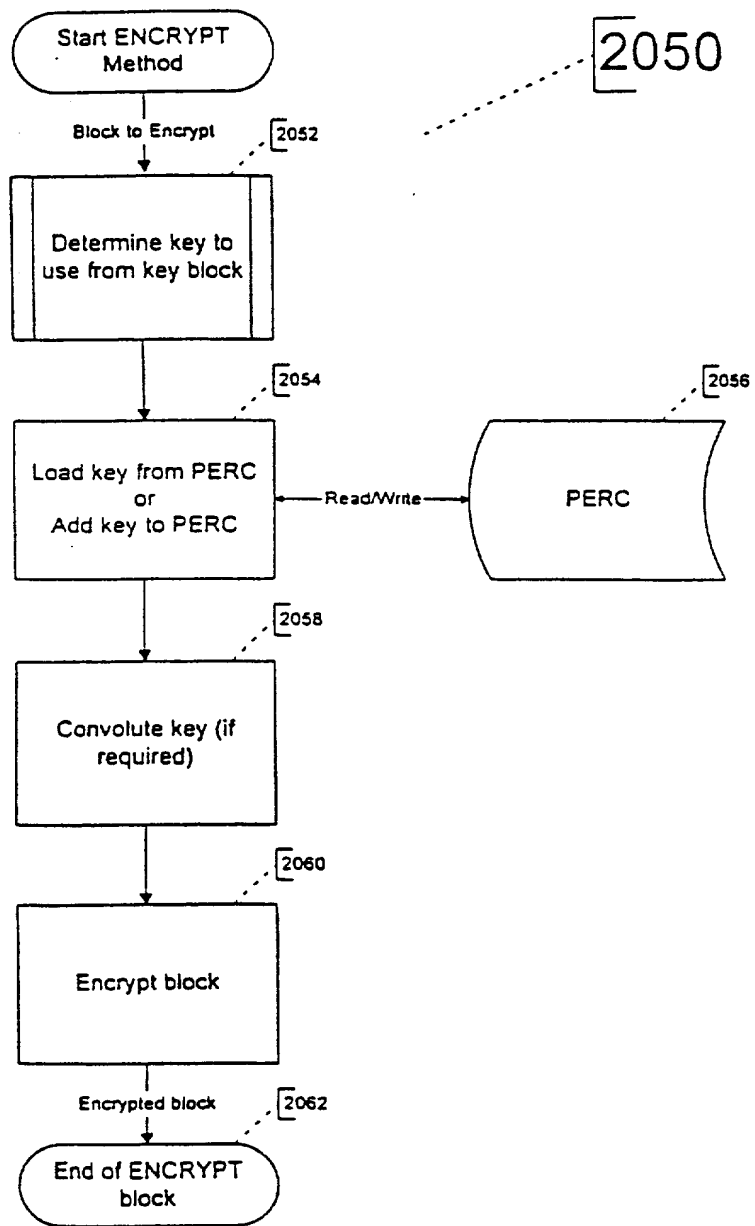


Figure 55a

10027926-1210-10121-926/2001



## ENCRYPT Method Process Flow

Figure 55b

# CONTENT Method Process Flow

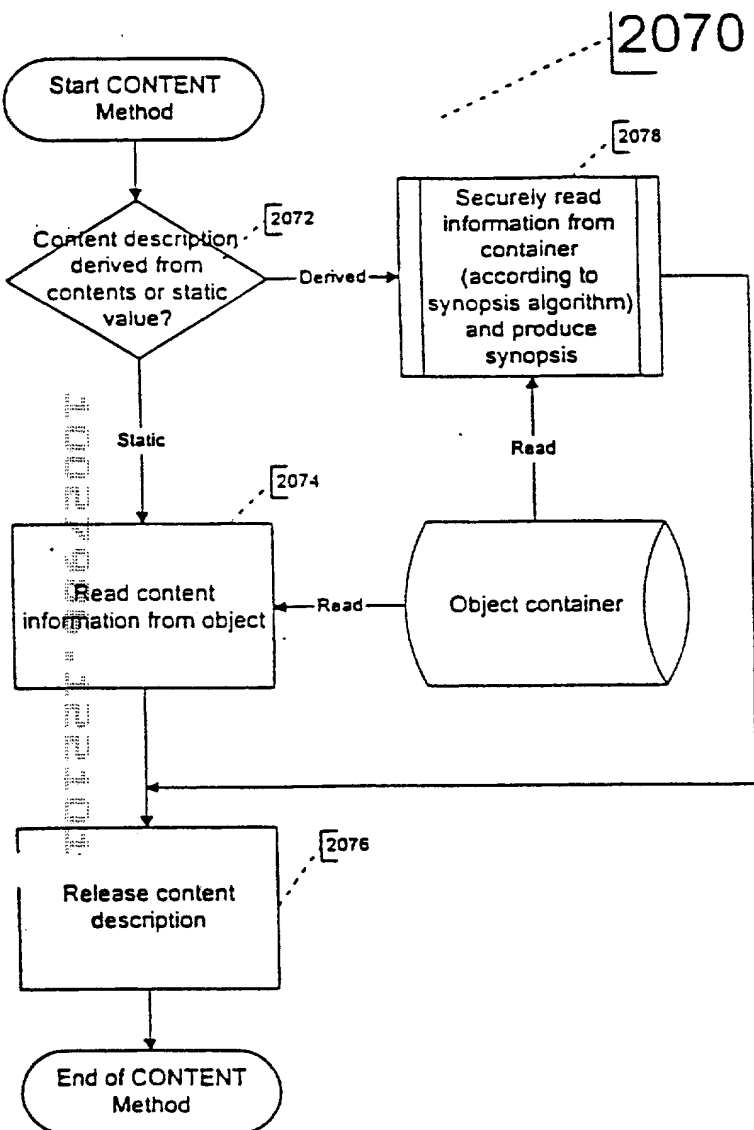


Figure 56

10027986 122401

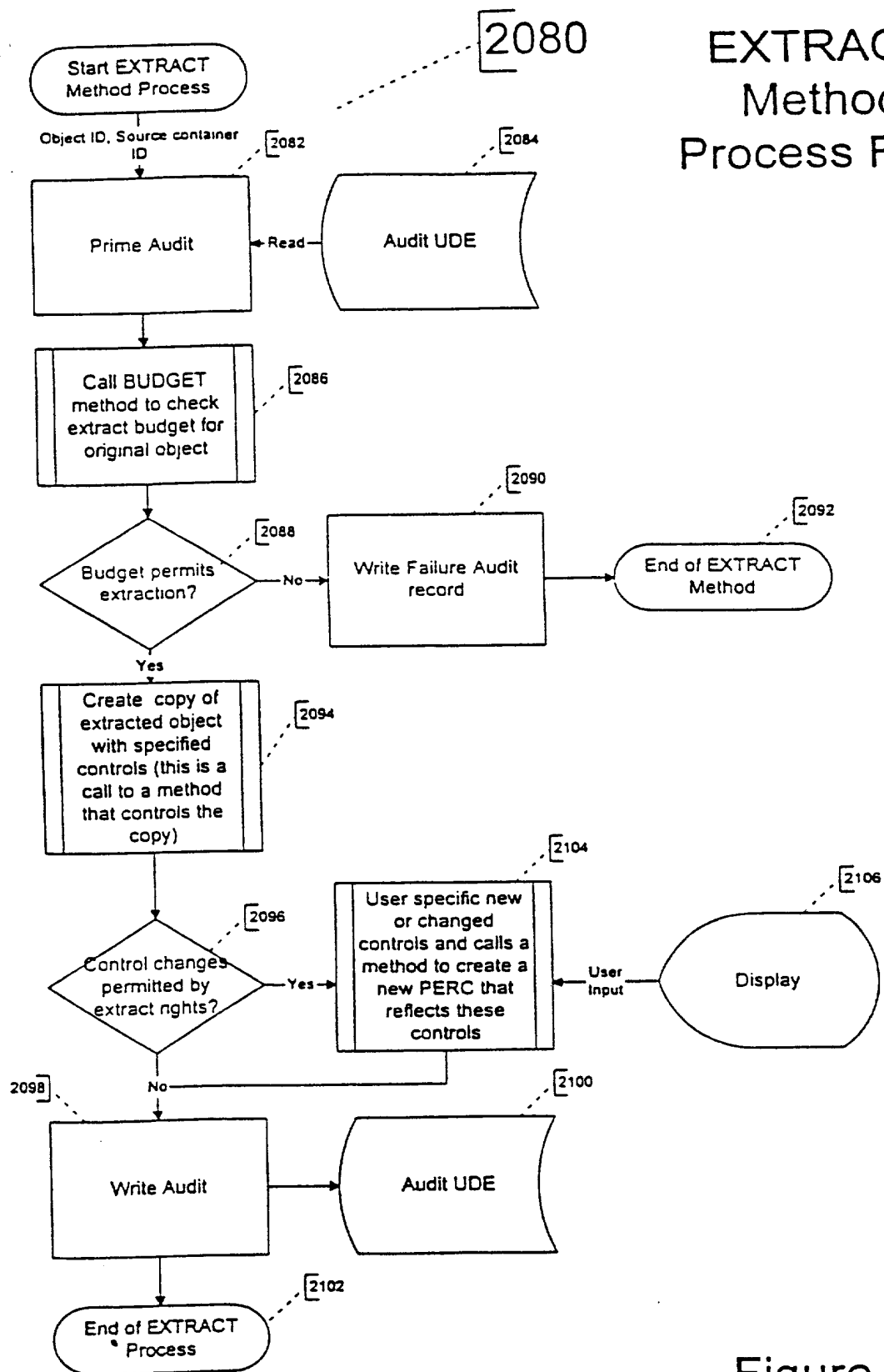


Figure 57a

1002986-122104

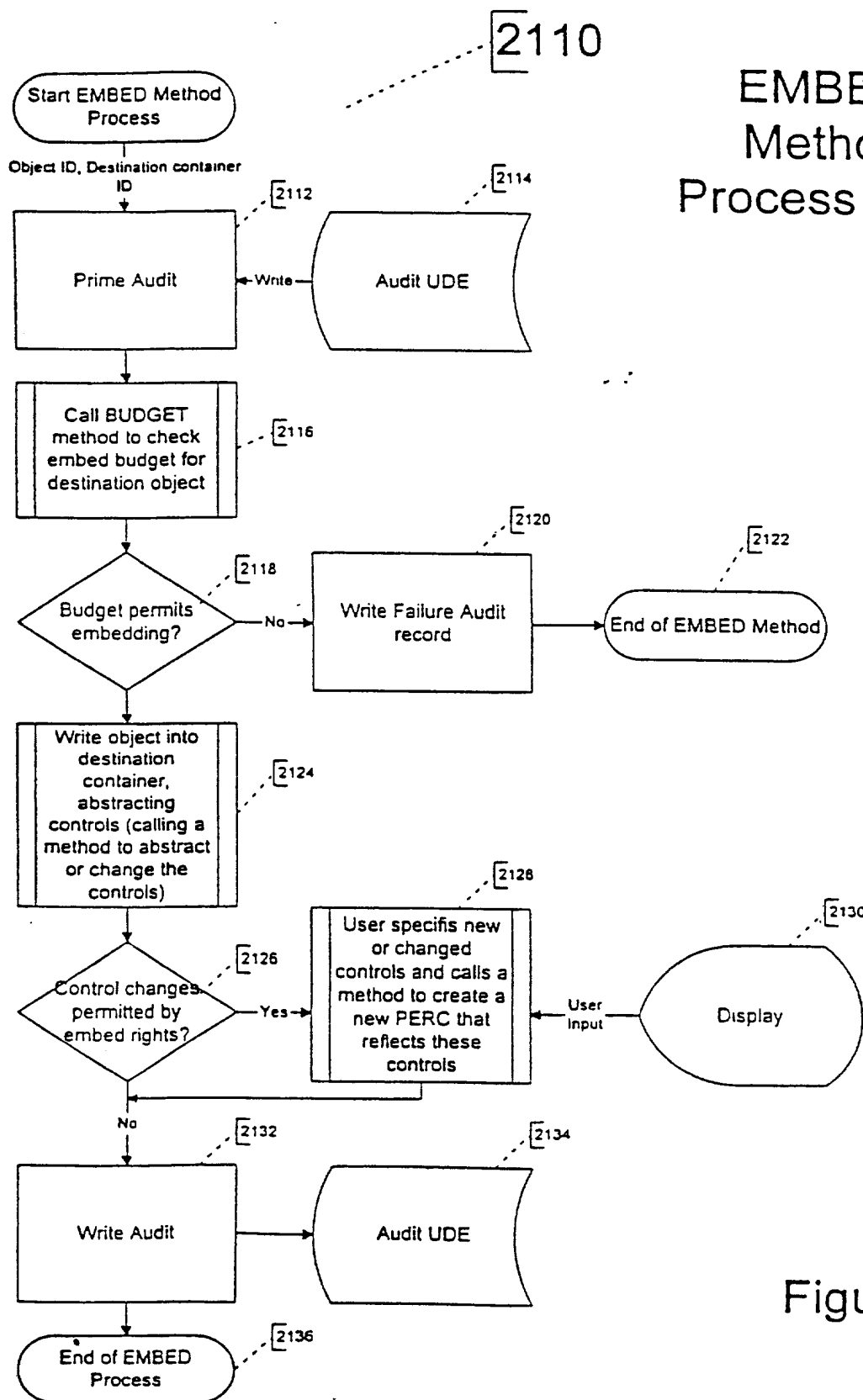
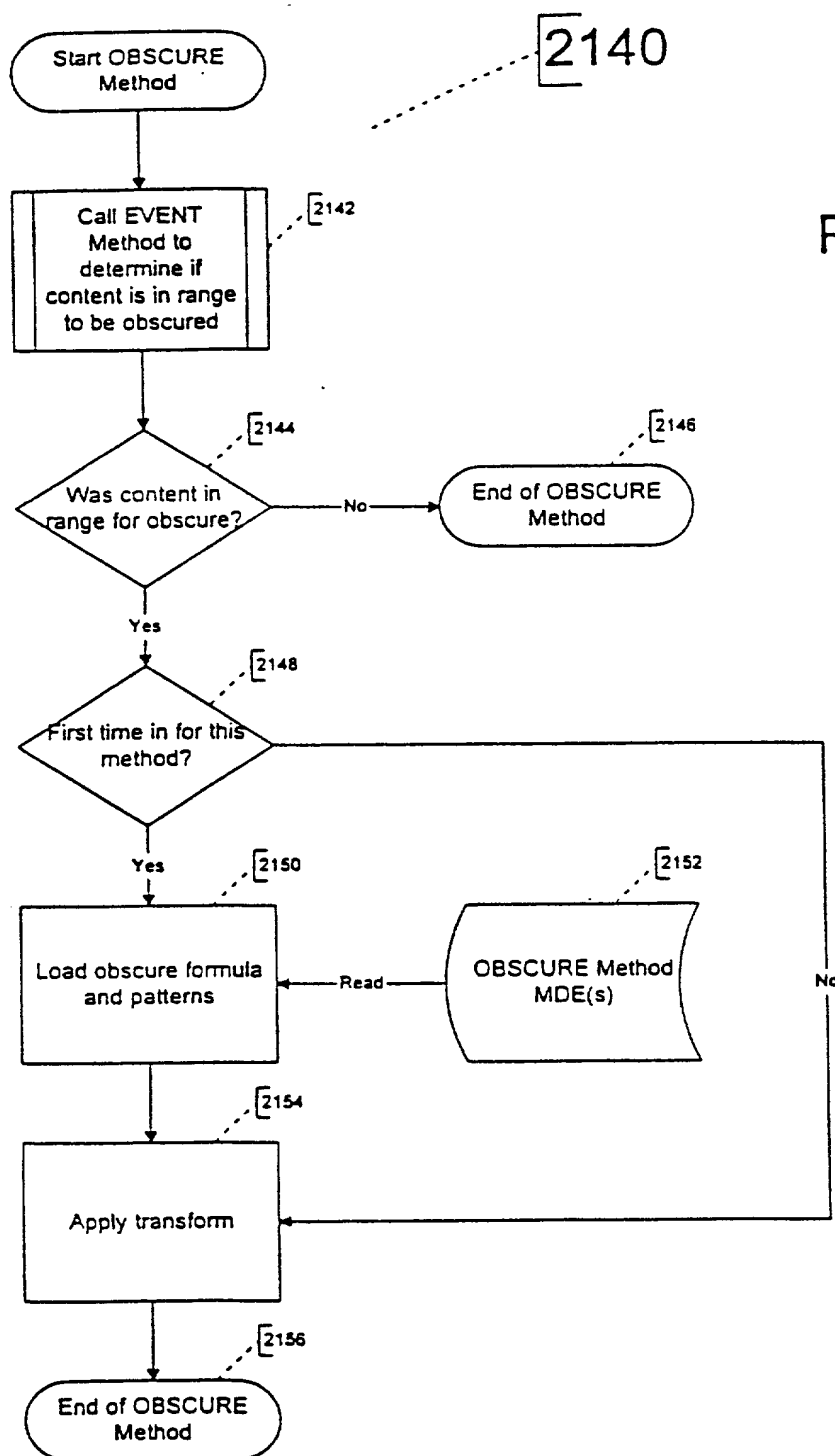


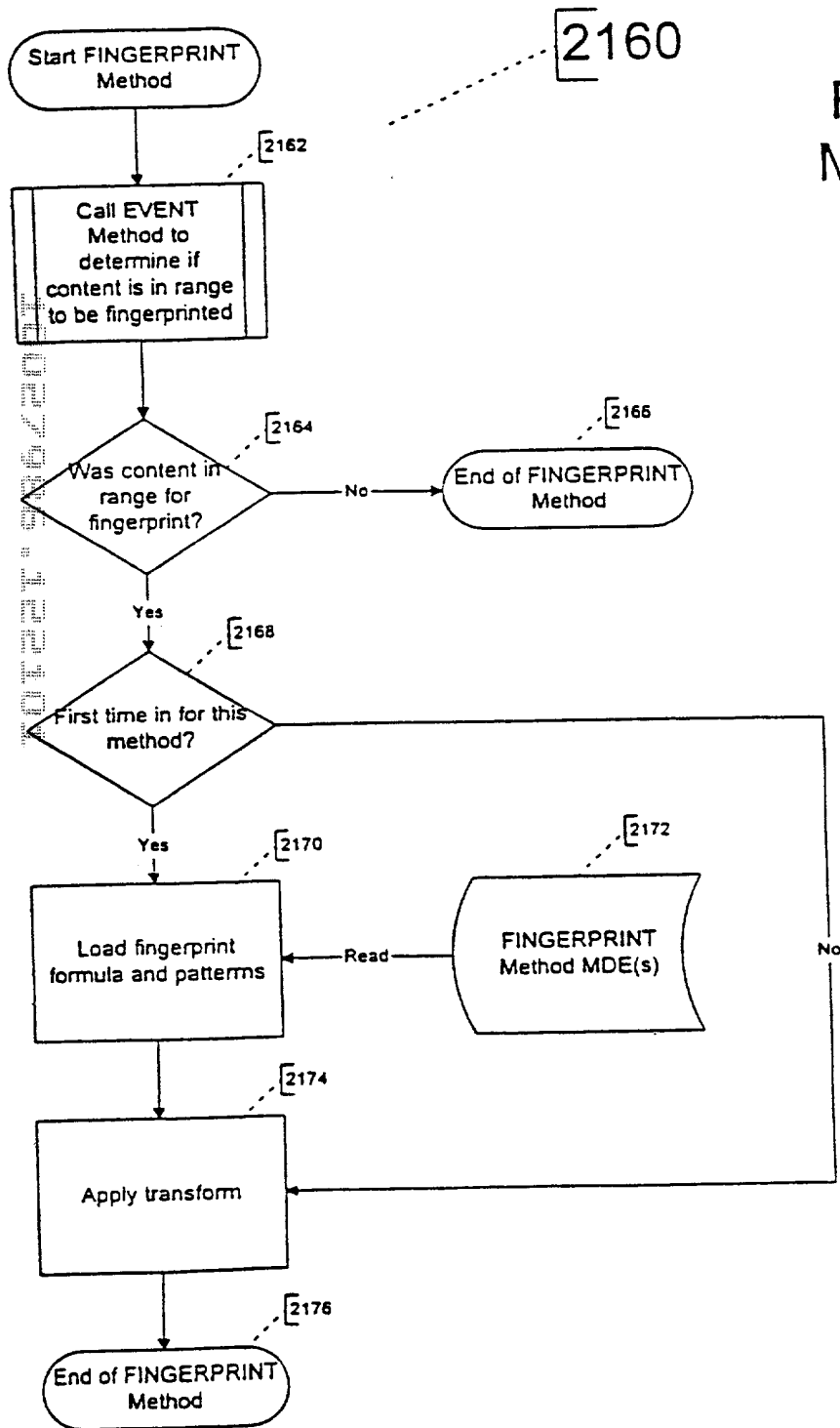
Figure 57b

10027986 122101



## OBSCURE Method Process Flow

Figure 58a



## FINGERPRINT Method Process Flow

Figure 58b

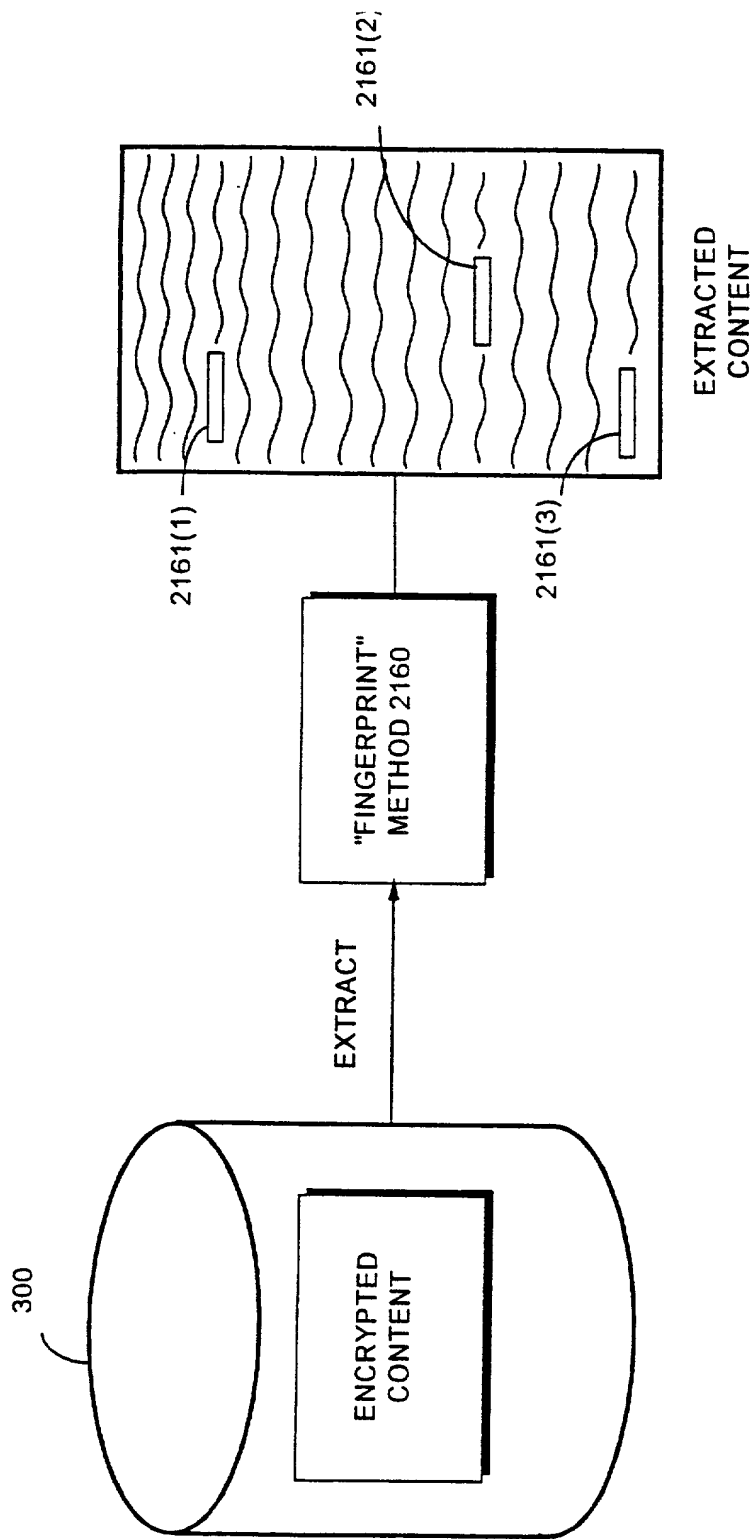


FIG. 58C



# DESTROY Method Process Flow

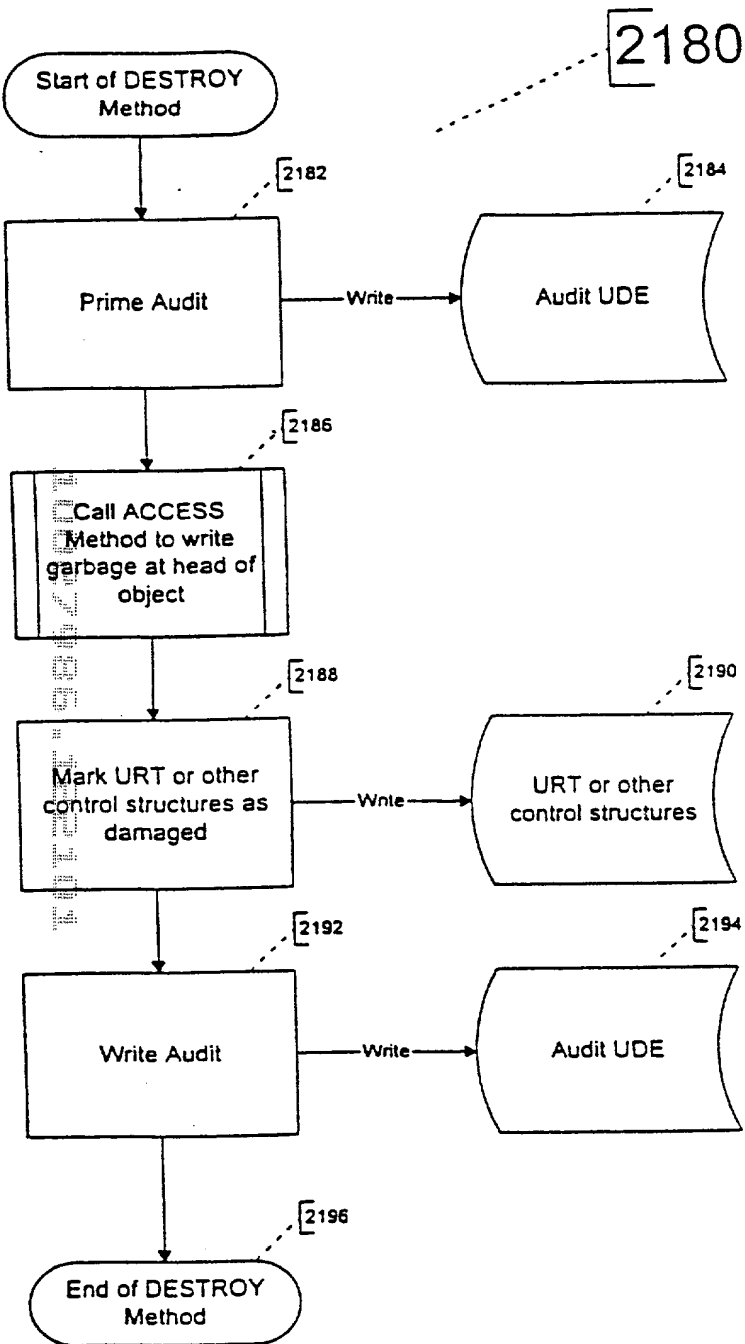
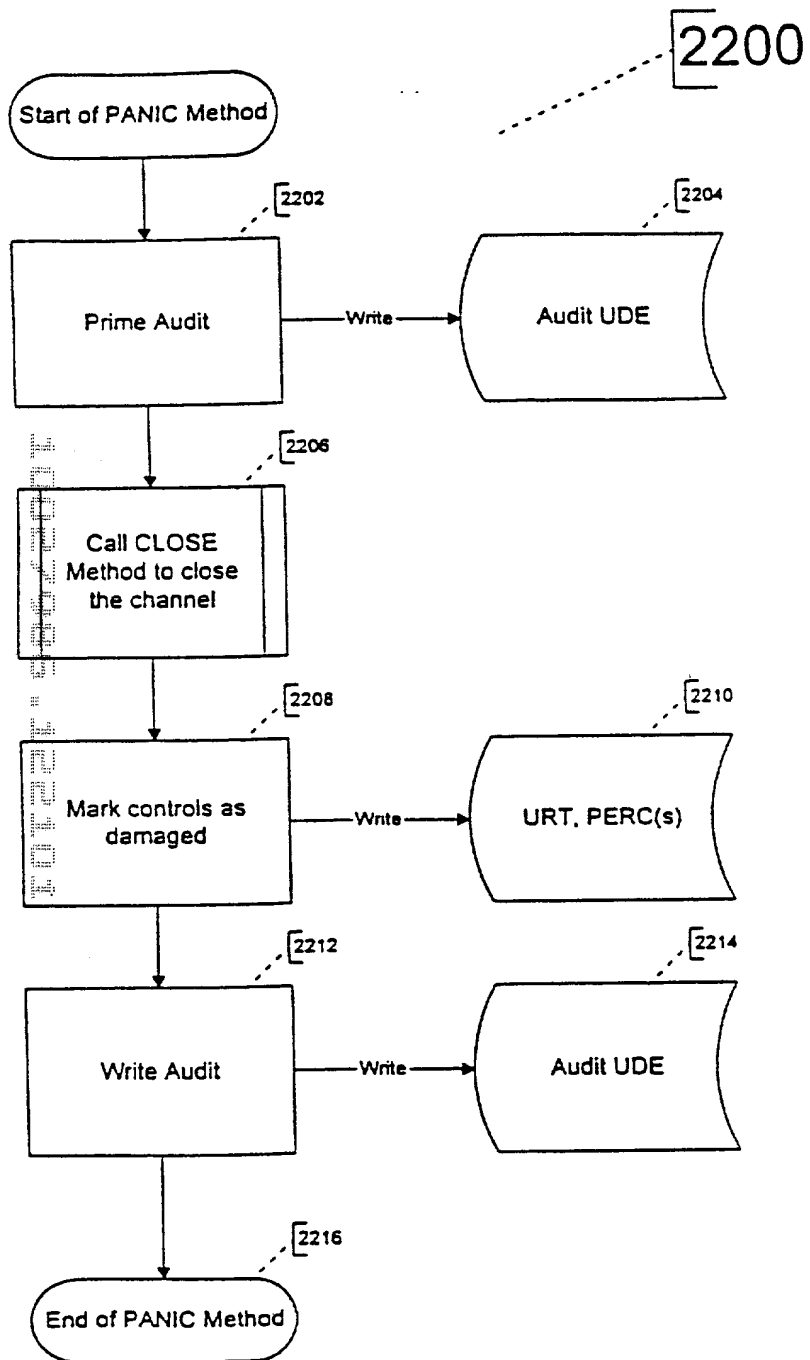


Figure 59



## PANIC Method Process Flow

Figure 60

# METER Method Use Process Flow

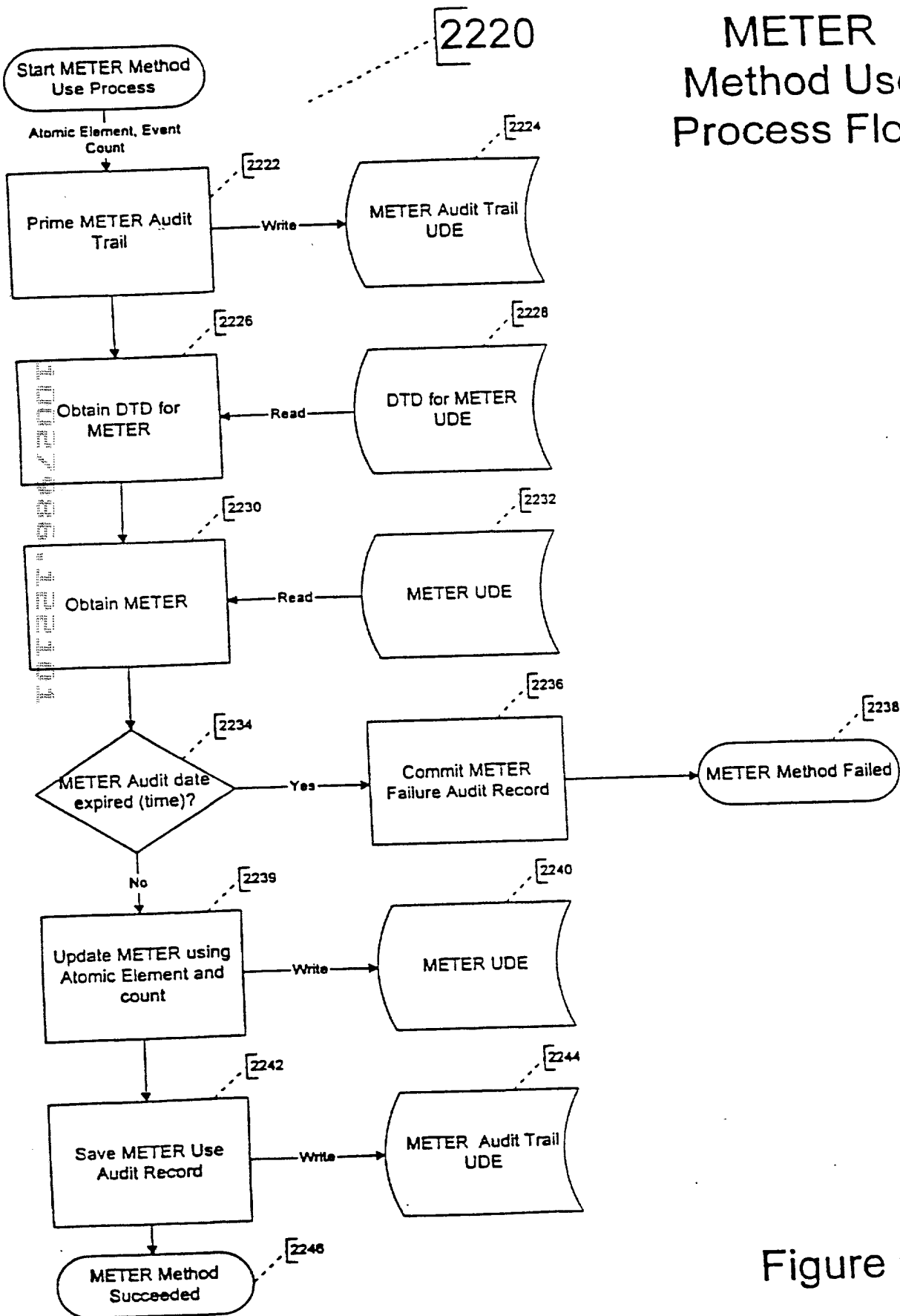
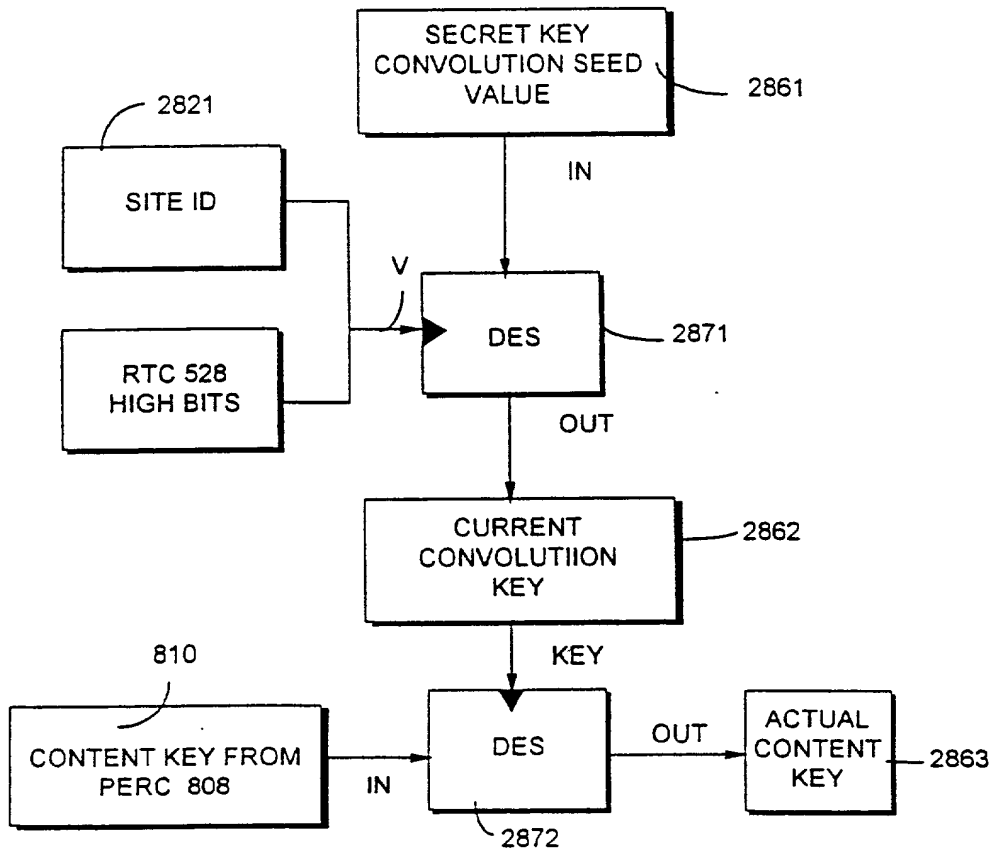
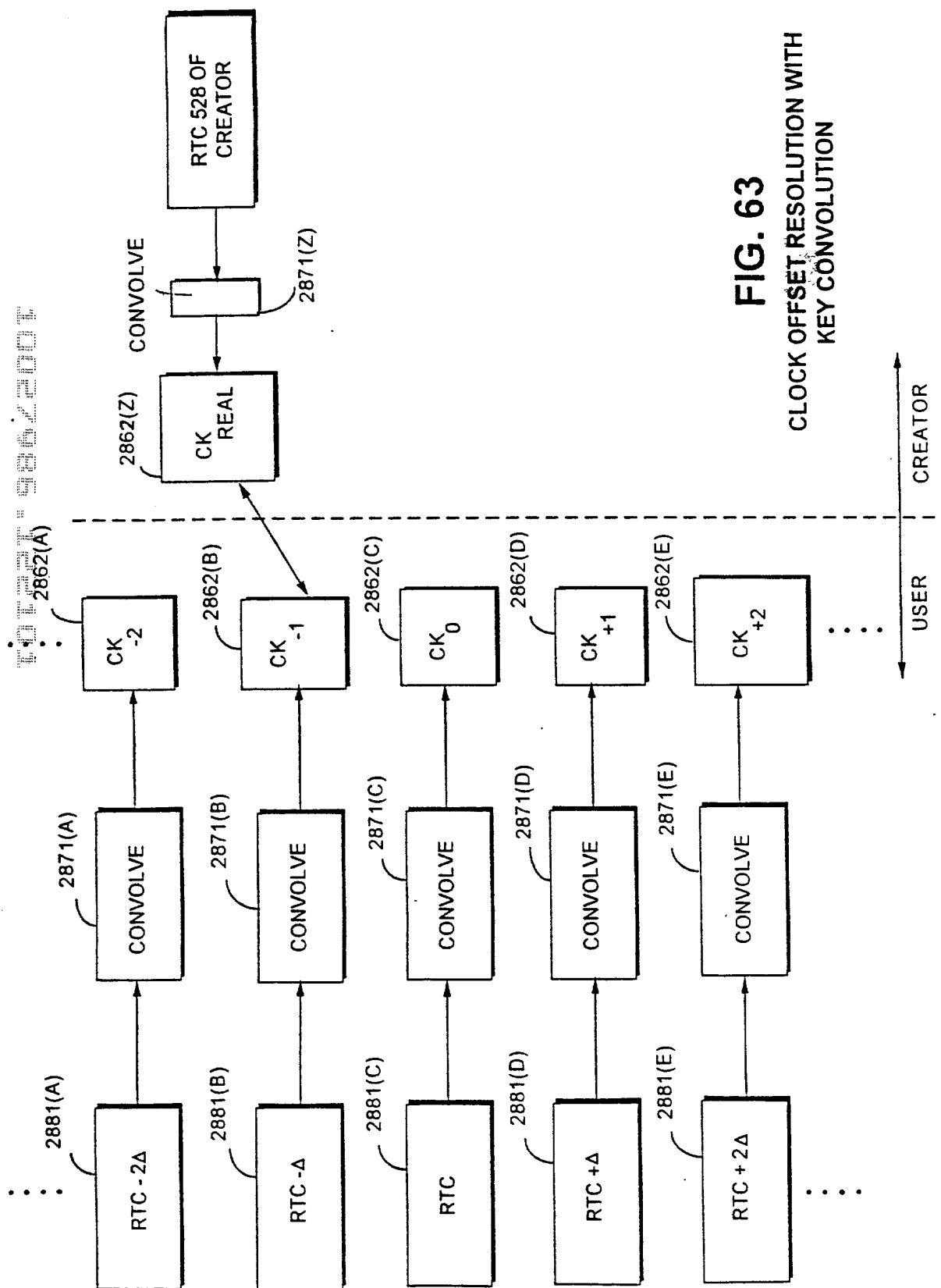


Figure 61

10027996-12301

**FIG. 62**  
KEY CONVOLUTION PROCESS





**FIG. 64** SPU KEY INITIALIZATION/INSTALLATION

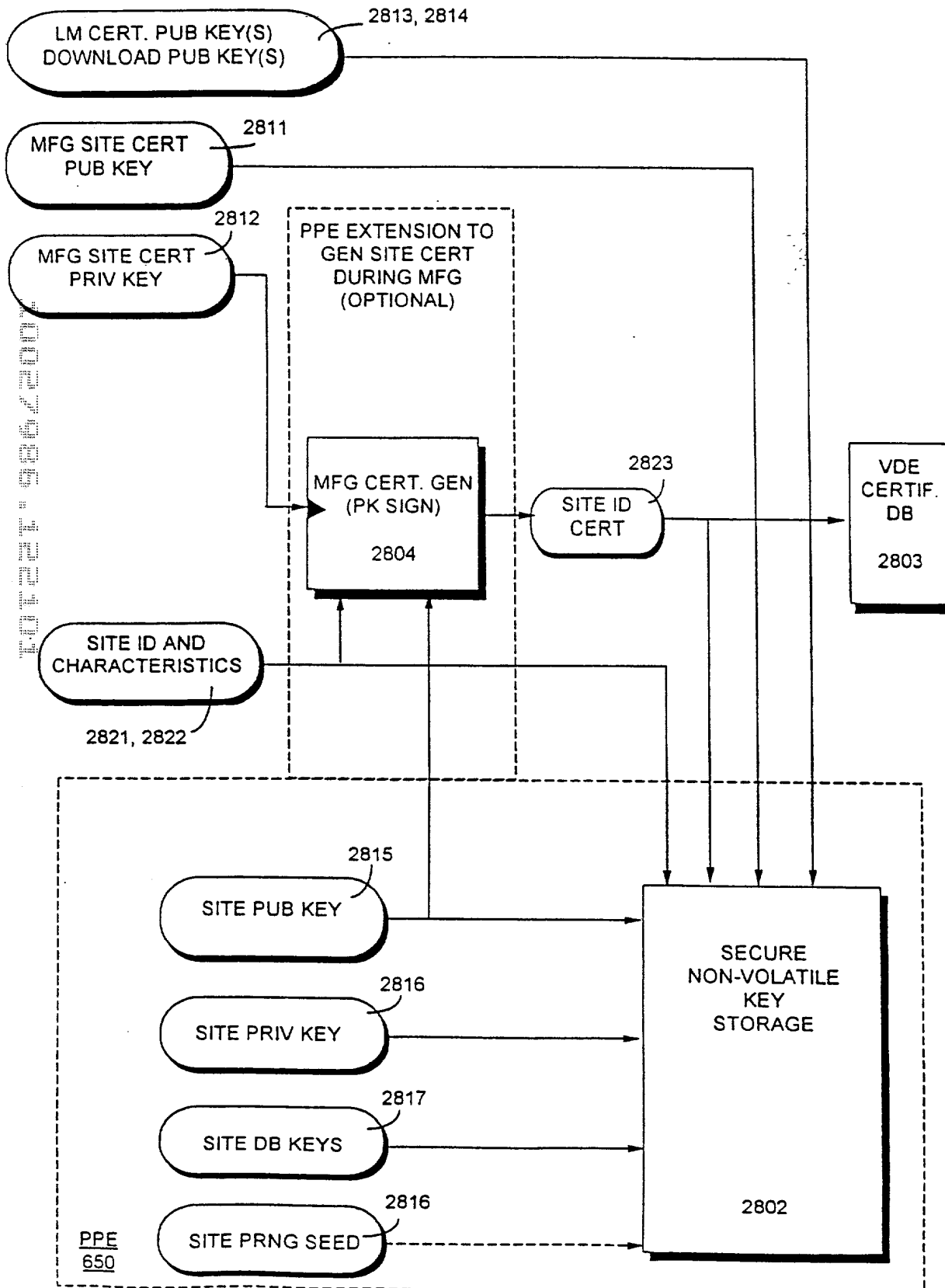
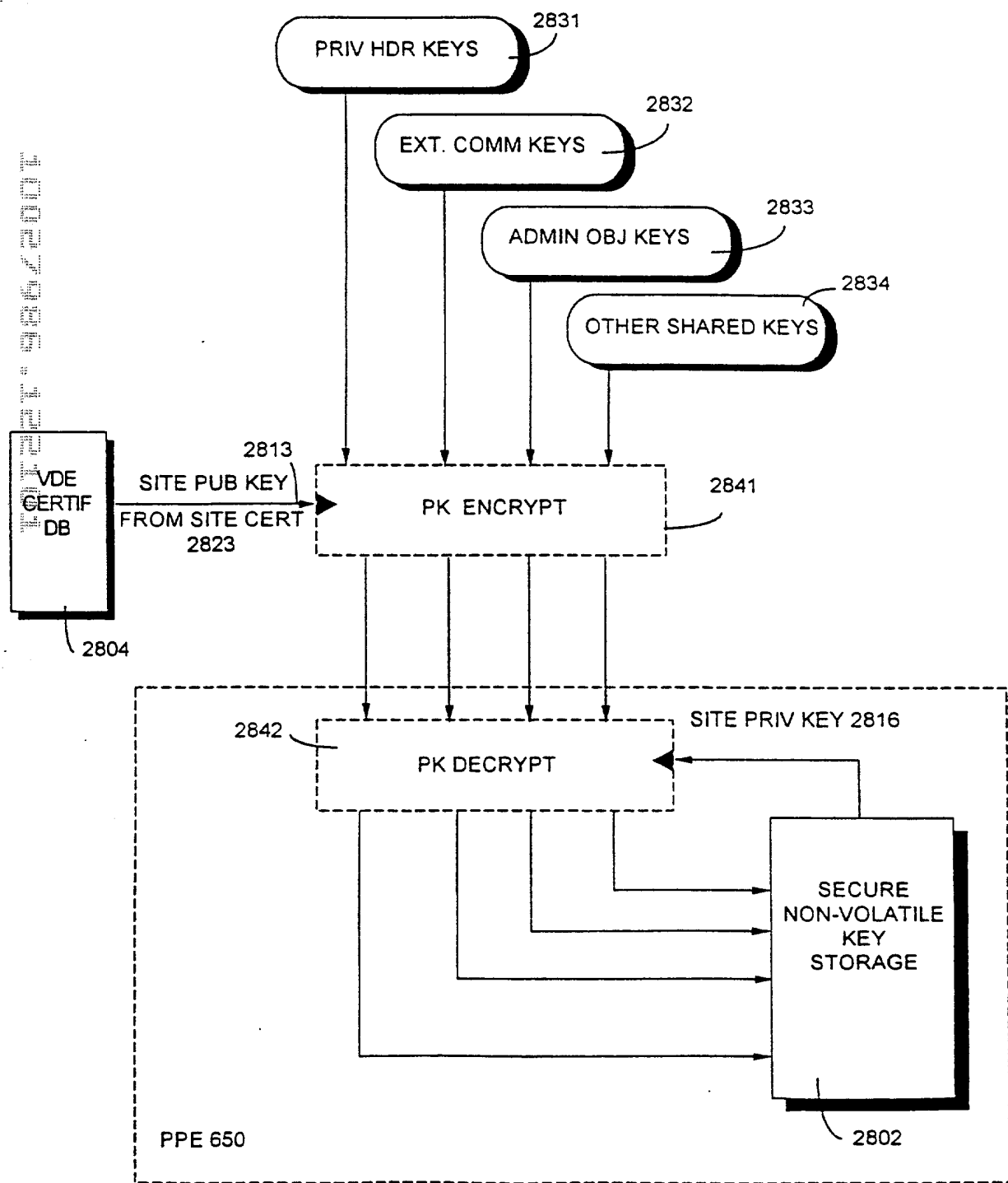
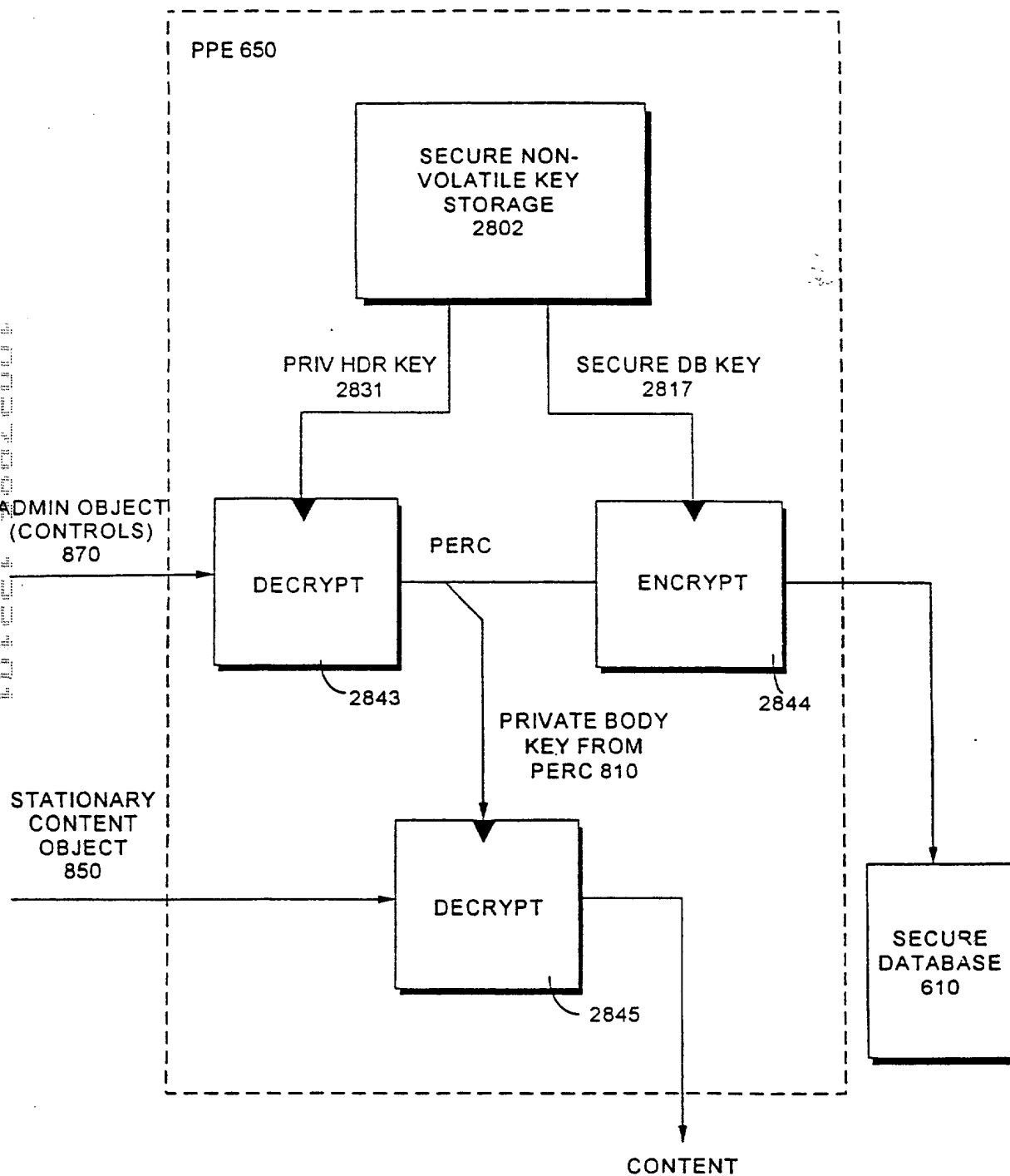


FIG. 65 KEY INSTALLATION & UPDATE

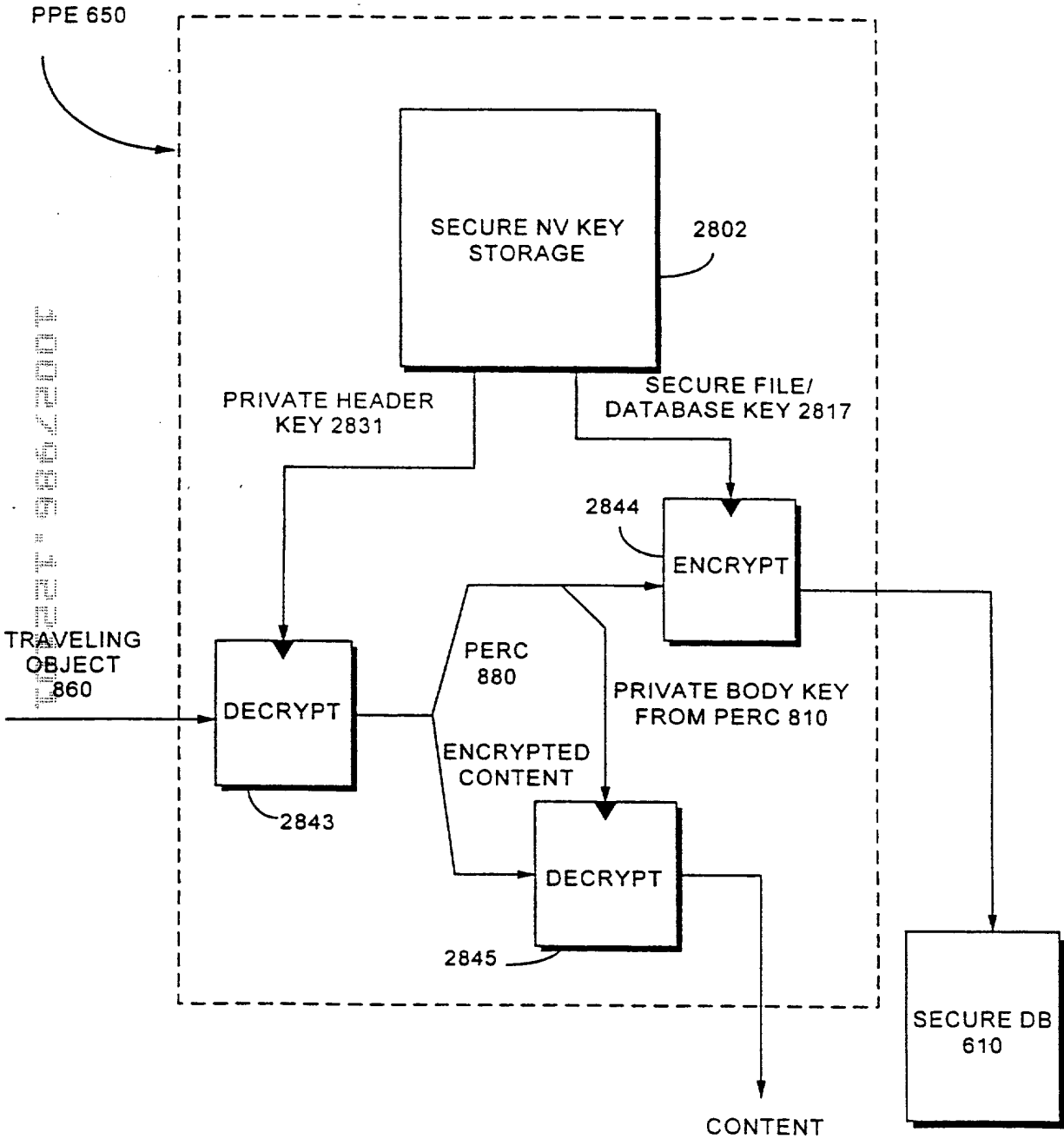


10027991 121701 101221 0062001



**FIG. 66** STATIONARY OBJECT DECRYPTION

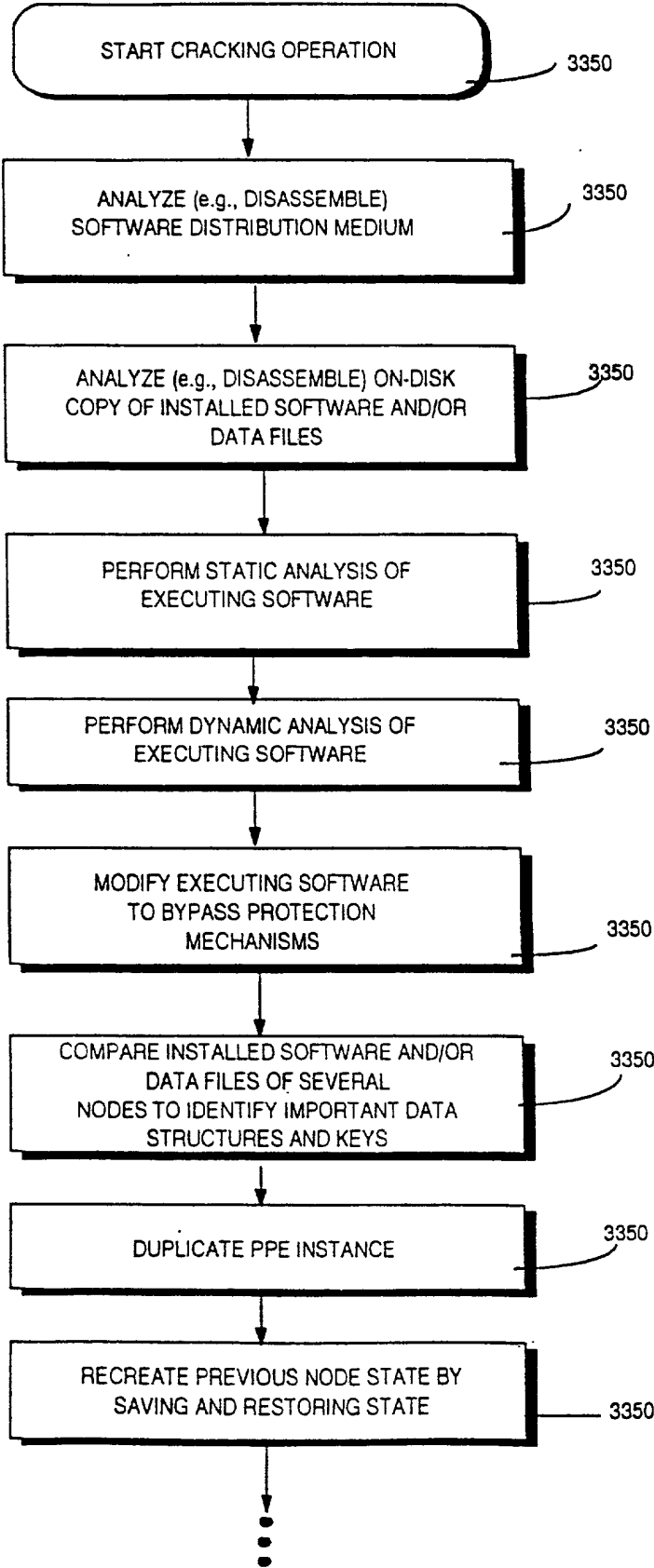




**FIG. 67** TRAVELING OBJECT DECRYPTION



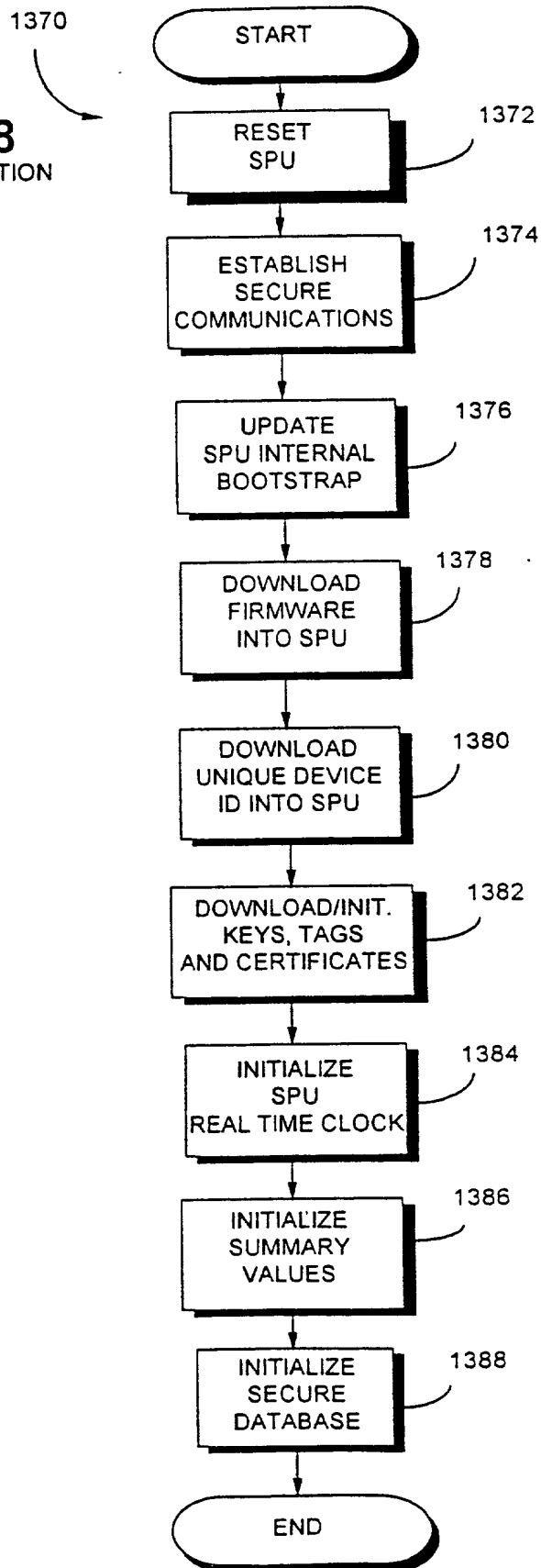
**Fig. 67B**  
**Example Cracking**  
**Operation**

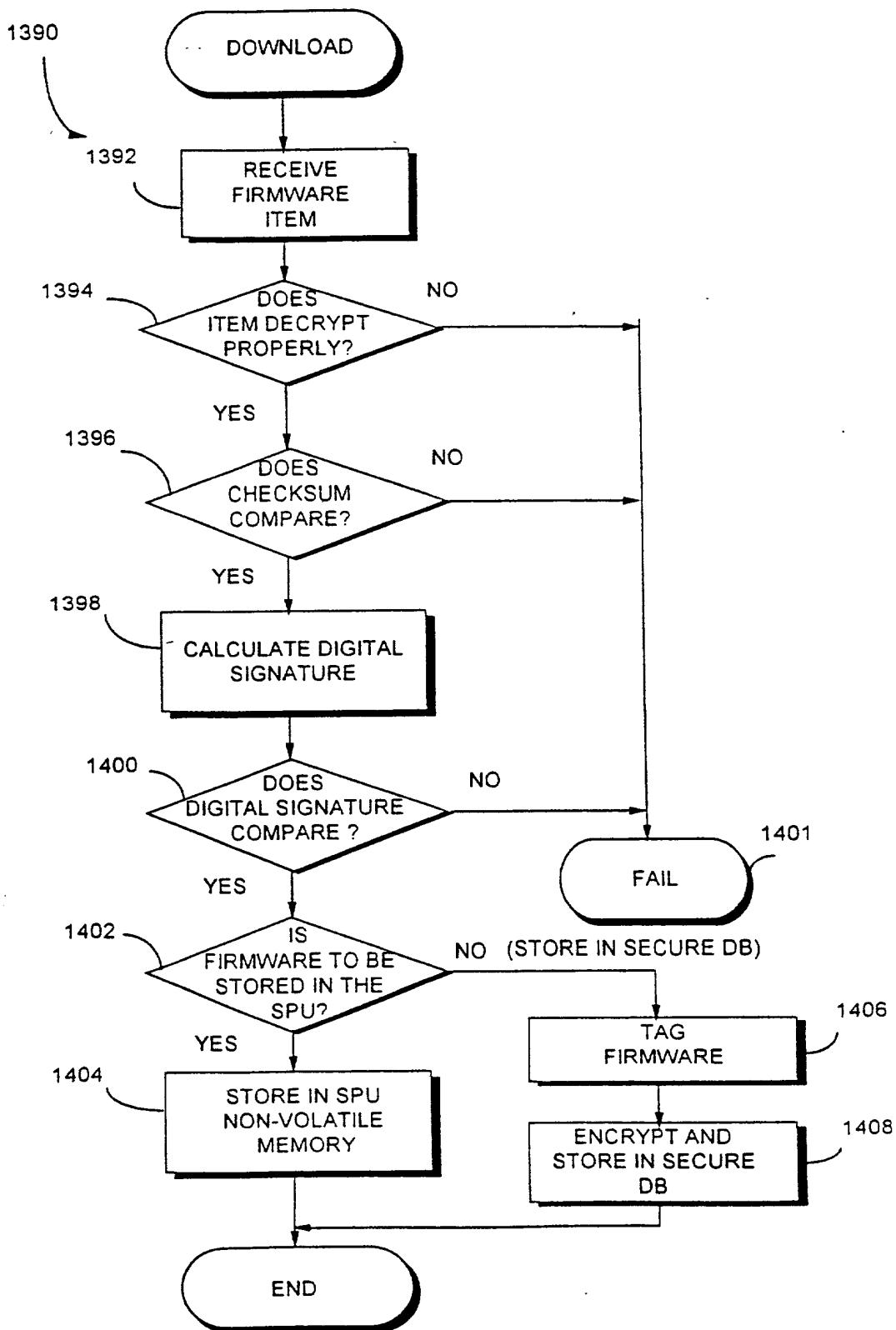


10027986 122101

10027986-12104  
TOP SECRET 98062001

**FIG. 68**  
SPU INITIALIZATION

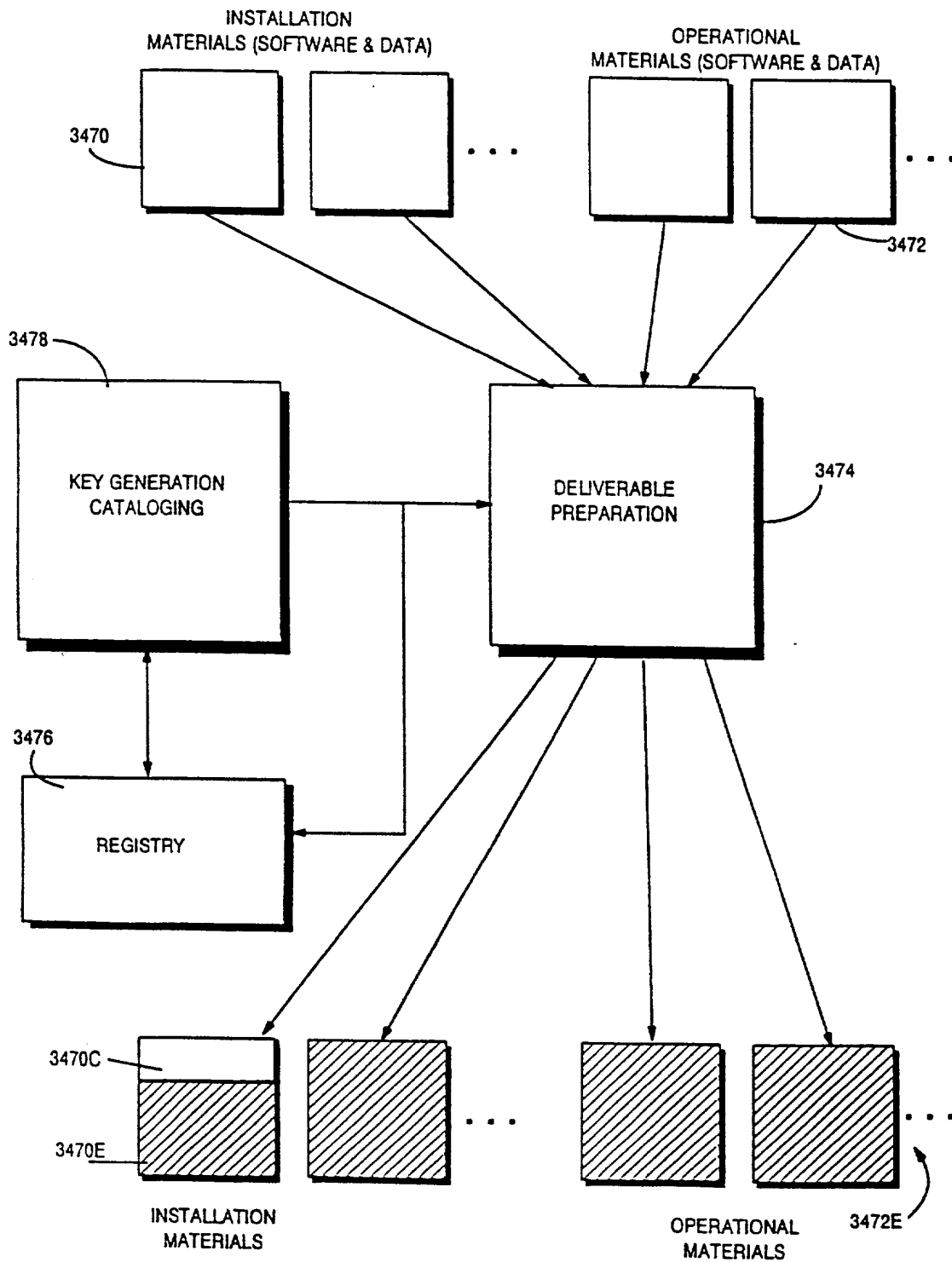




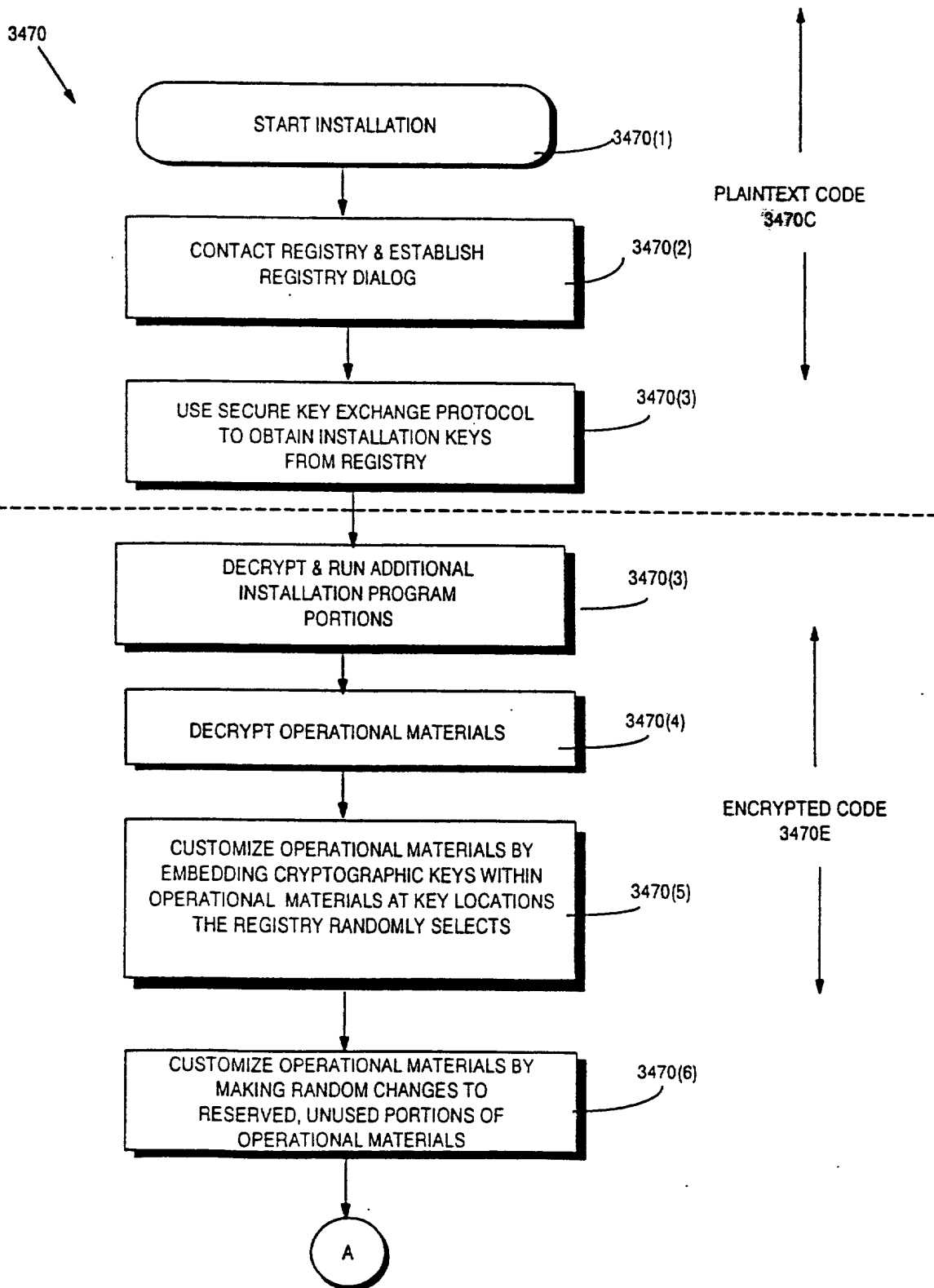
**FIG. 69**

SPU FIRMWARE  
DOWNLOAD

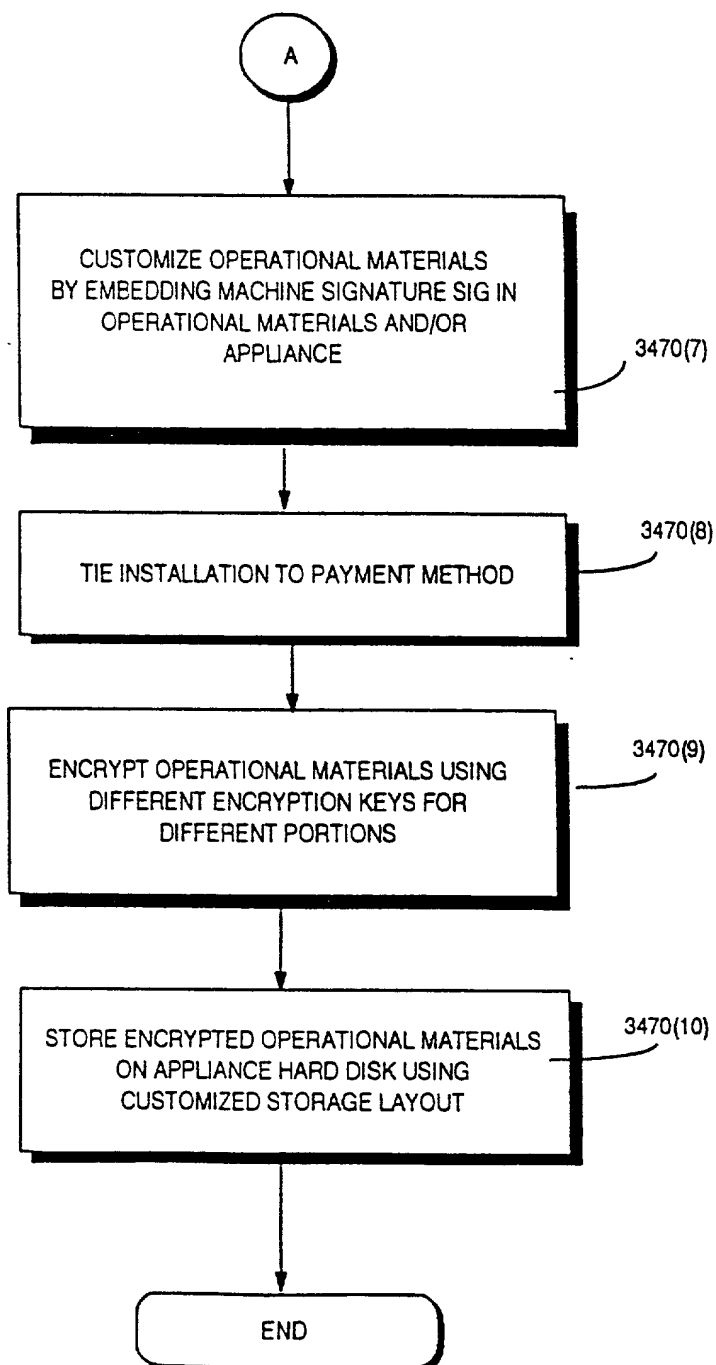
**Fig. 69A** Software Distributed In Encrypted Form



**Fig. 69B** Example Installation Routine



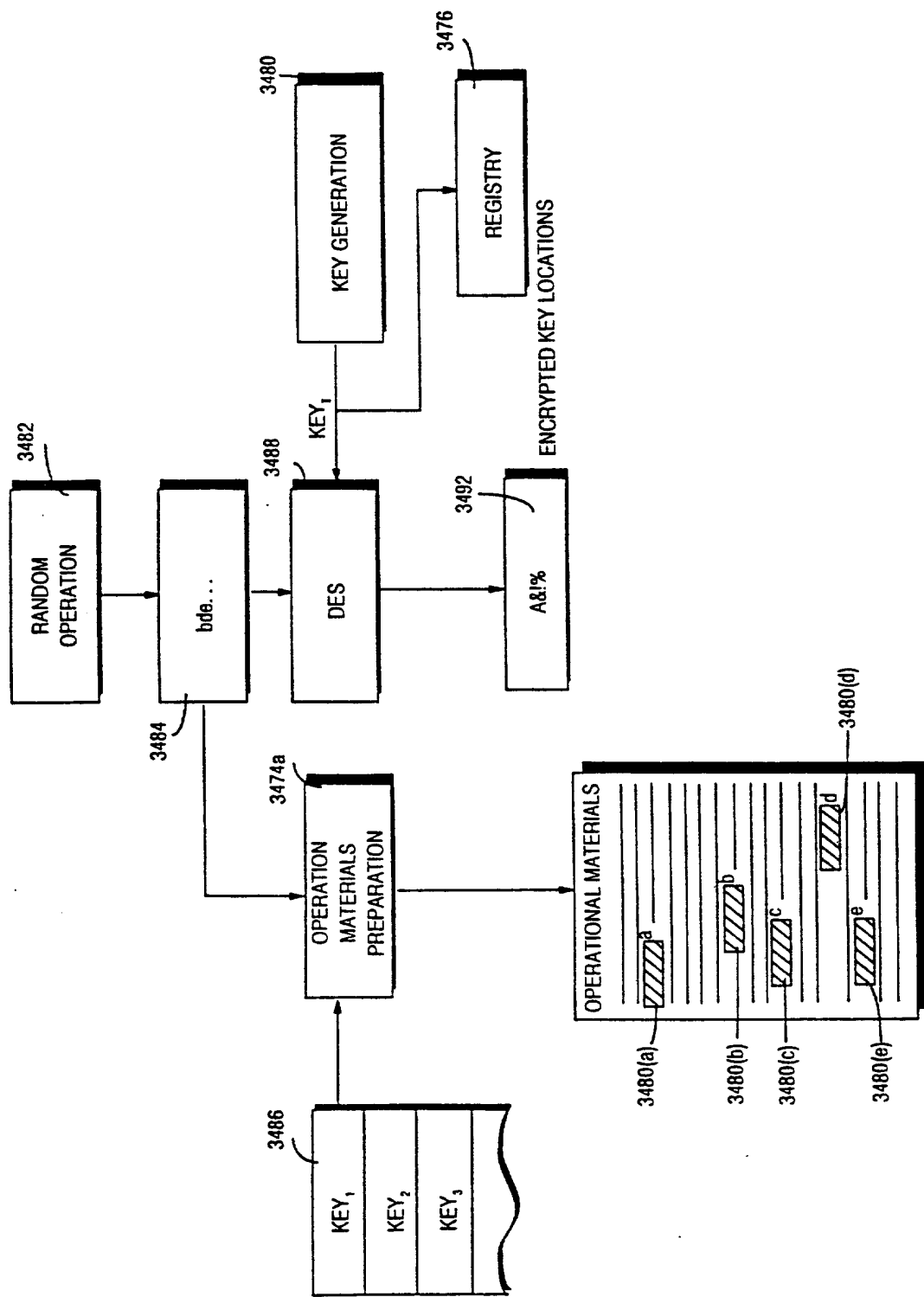
**Fig. 69C** Example Installation Routine



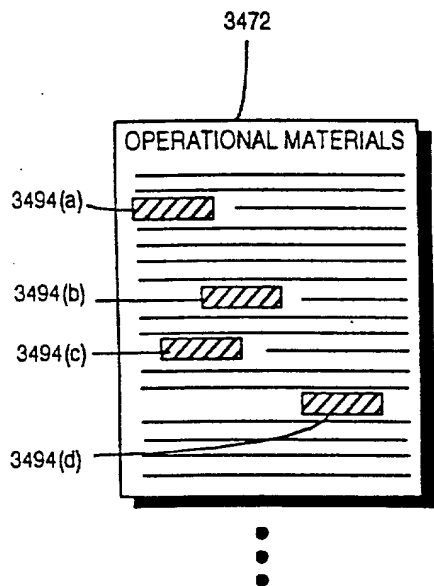
1002996/2007



**Fig. 69D Embedding Keys At Different Locations With Operational Materials**

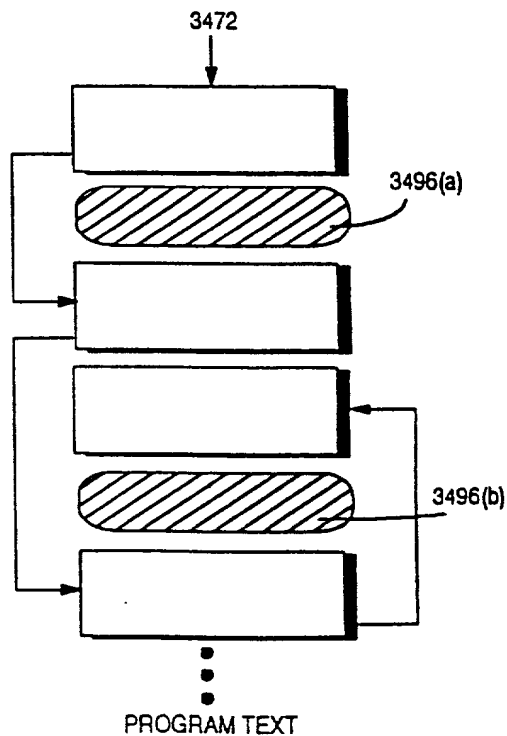


10027961-2001

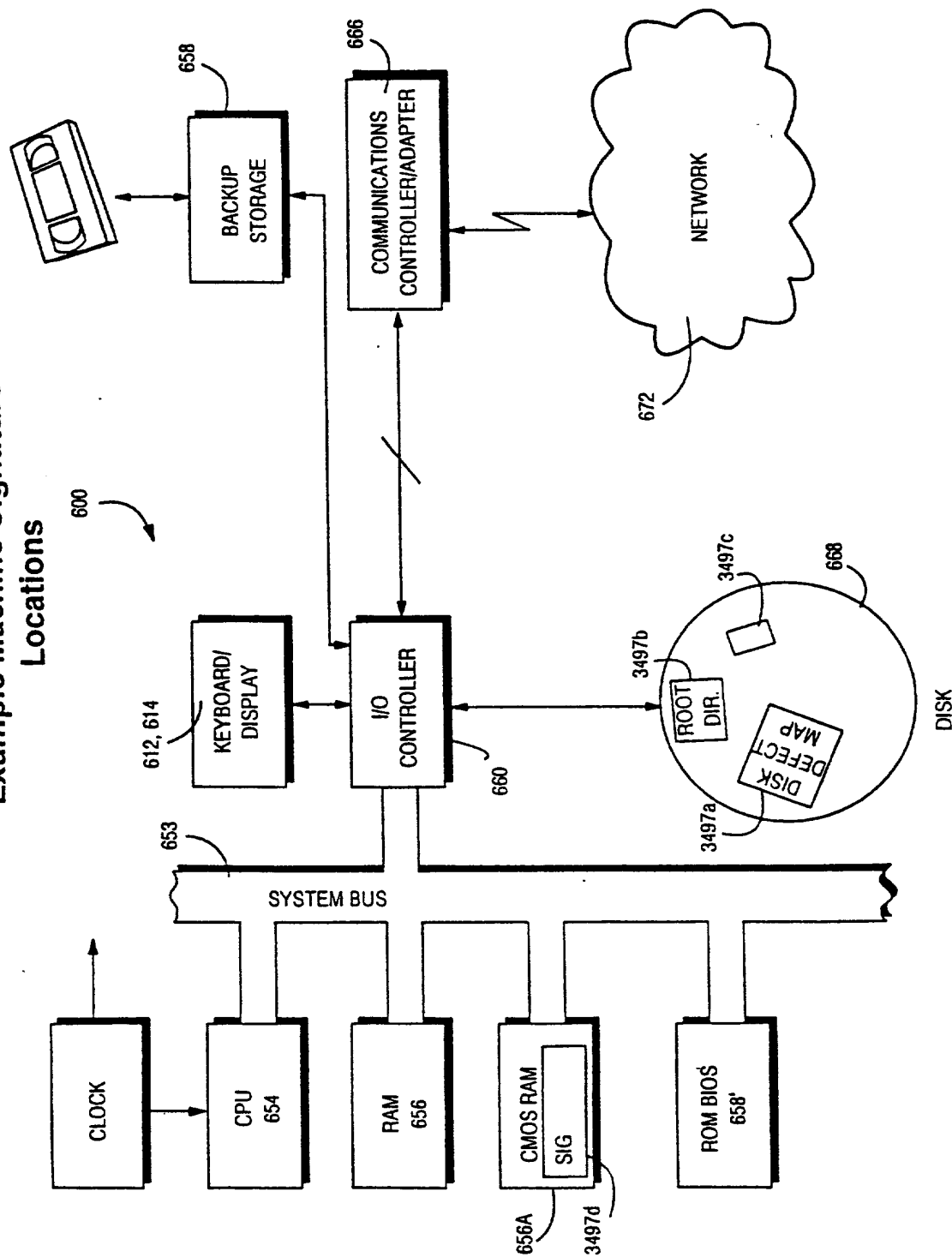


**Fig. 69E**  
Example Locations For Random  
Modifications and Fingerprints

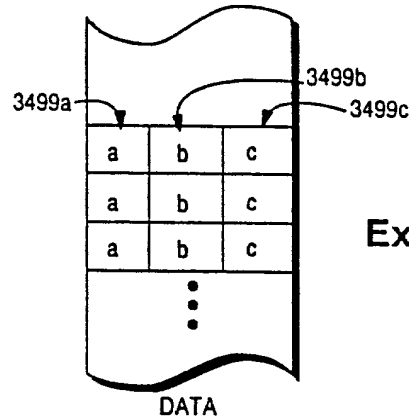
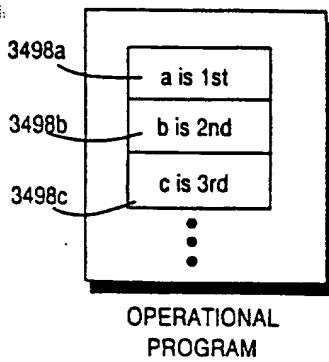
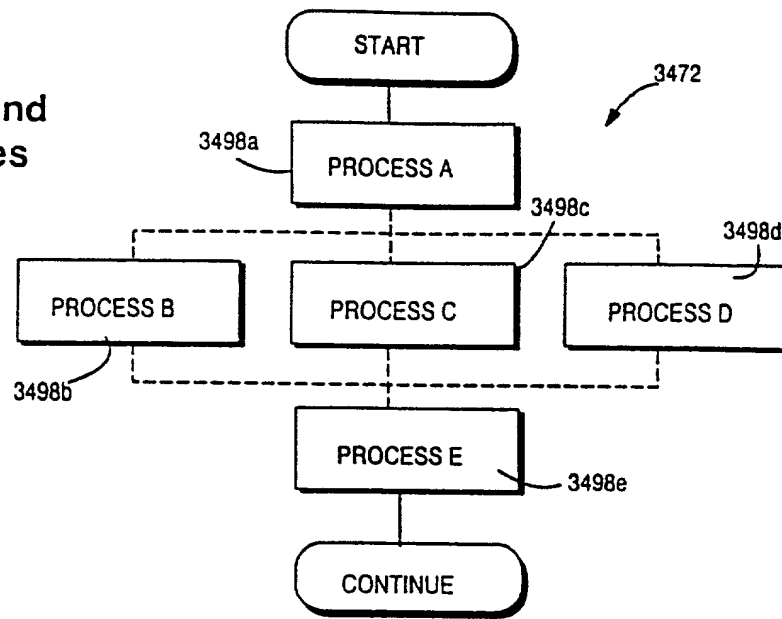
**Fig. 69F**  
Example Customized Static  
Storage Layout



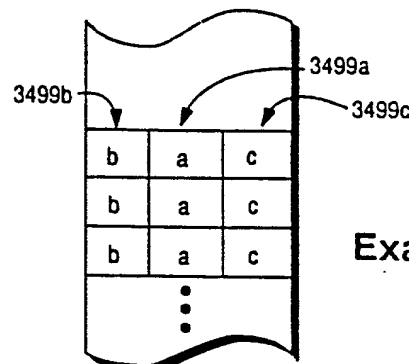
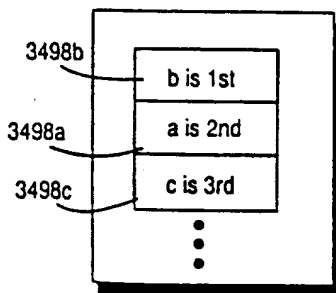
**Fig. 69G**  
Example Machine Signature  
Locations



**Fig. 69H**  
Sequence Dependent and Independent Processes

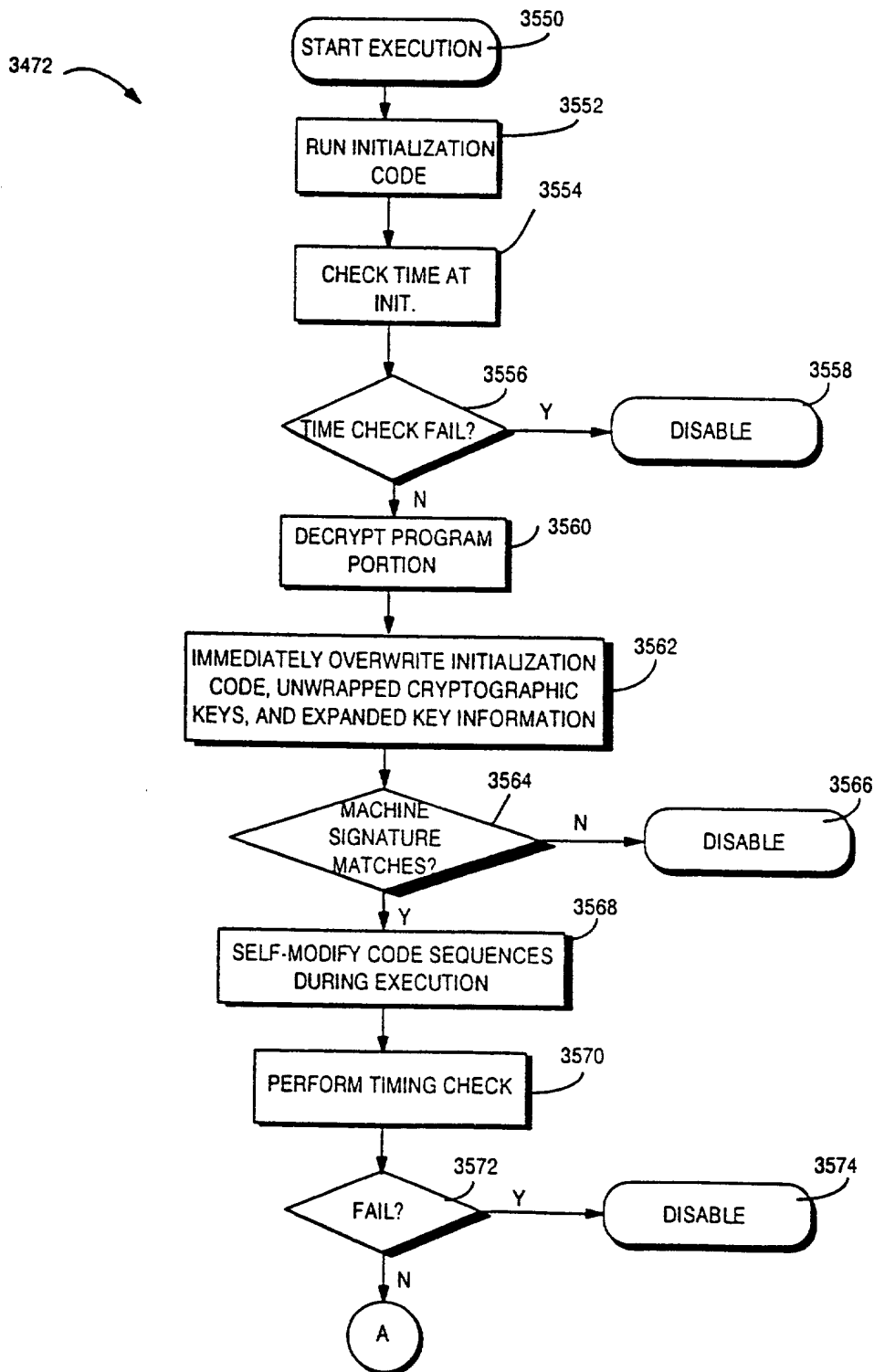


**Fig. 69I**  
Example First Order

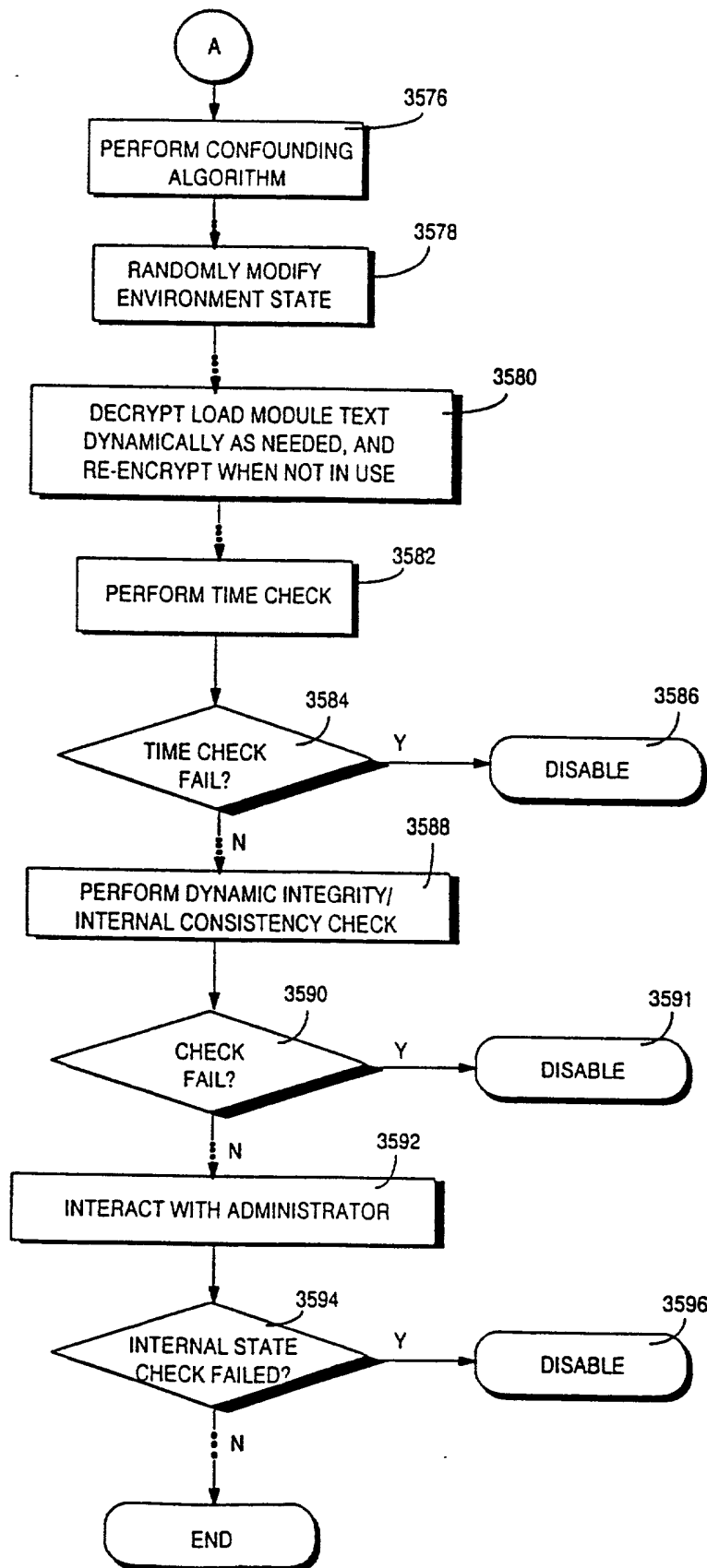


**Fig. 69J**  
Example Second Order

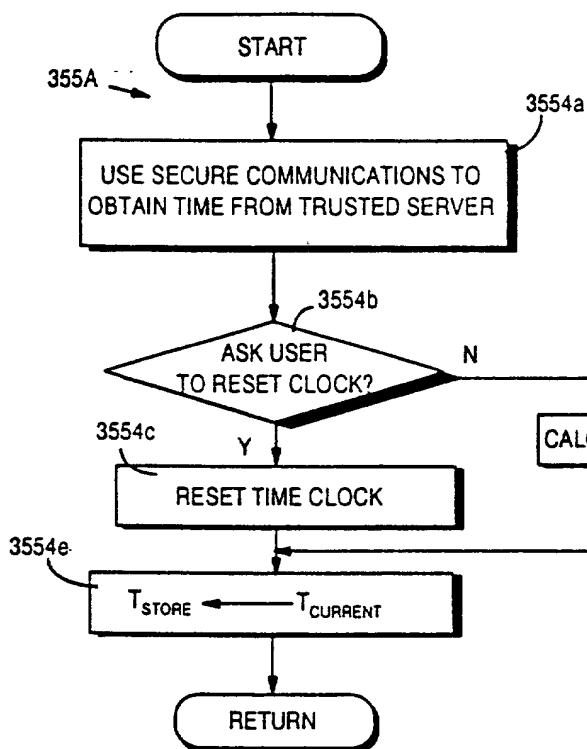
**Fig. 69K**  
Example Dynamic Protection  
Mechanisms



**Fig. 69L**  
Example Dynamic  
Protection  
Mechanisms



**Fig. 69M**  
Example Time  
Check At  
Initialization  
Routine

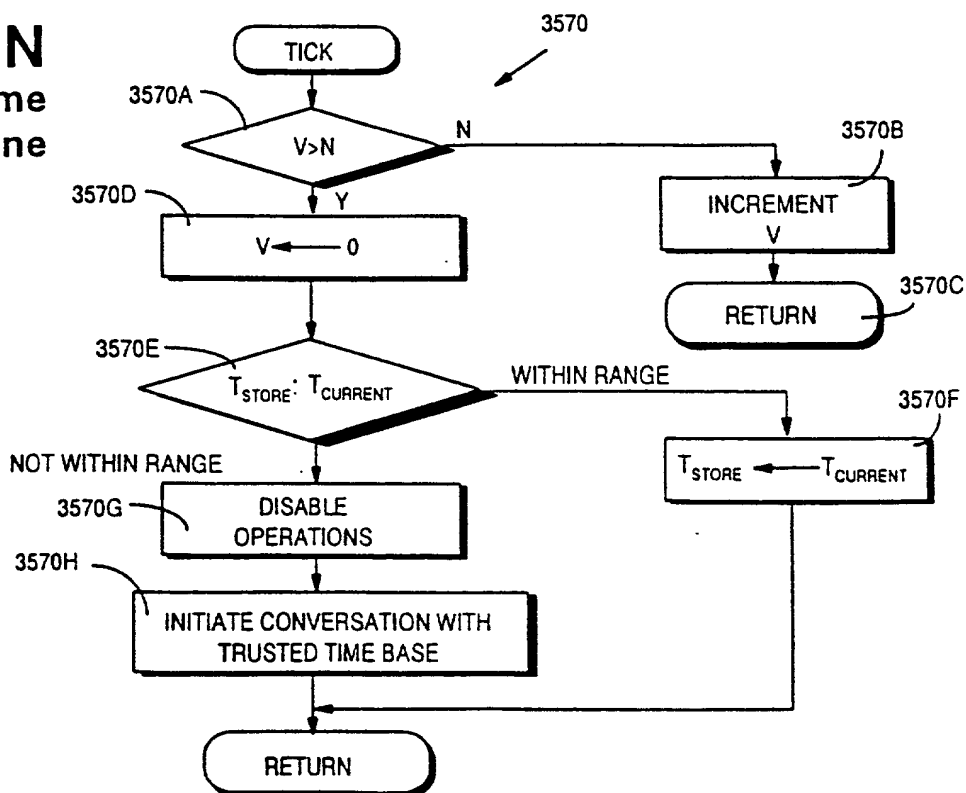


DRAFT BUDGET
AMT DRAFTED
ΔT
T <sub>STORE</sub>

**Fig. 69O**

10027986-122101

**Fig. 69N**  
Example Time  
Check Routine



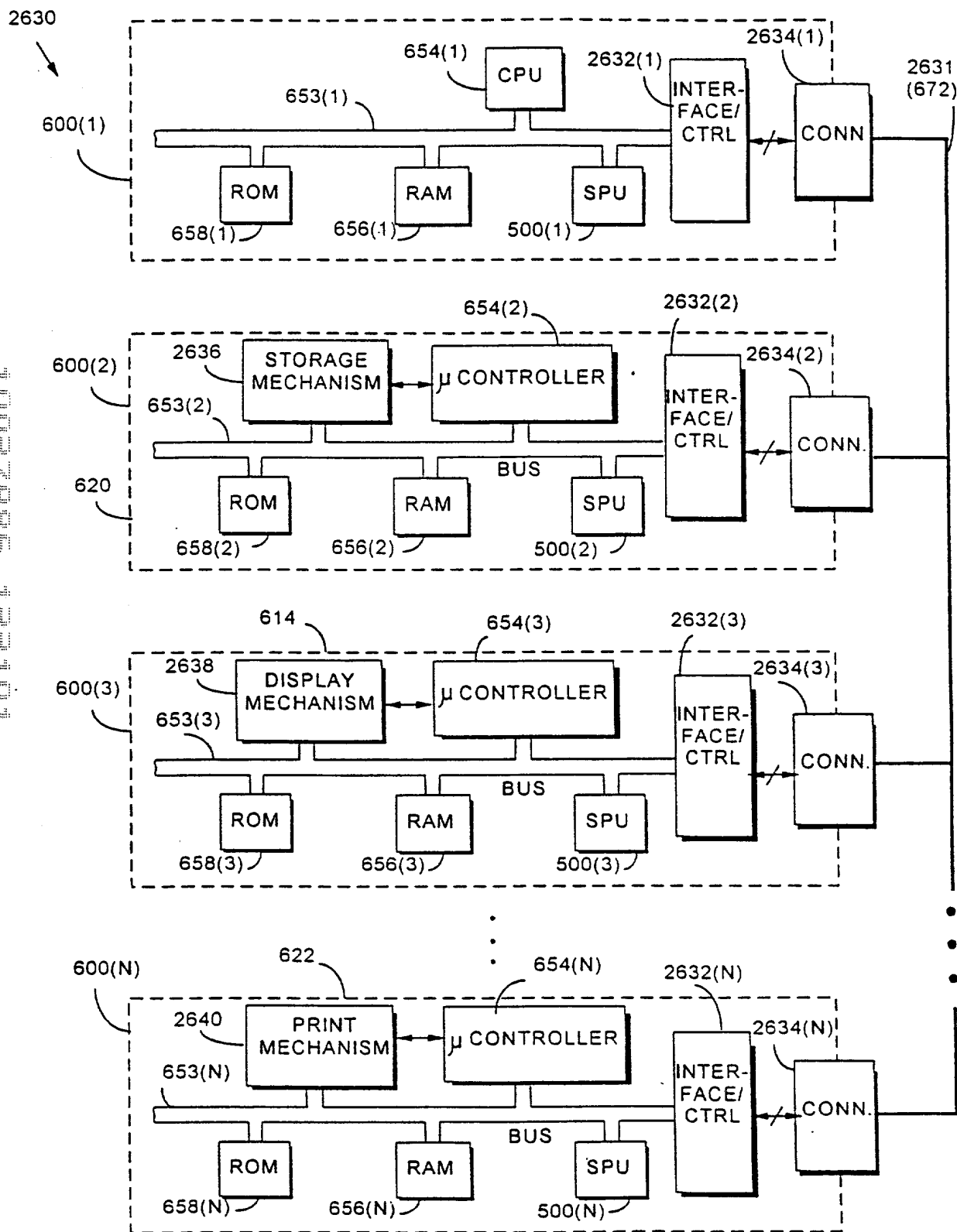


FIG. 70



FIG. 70A

FIG. 70A

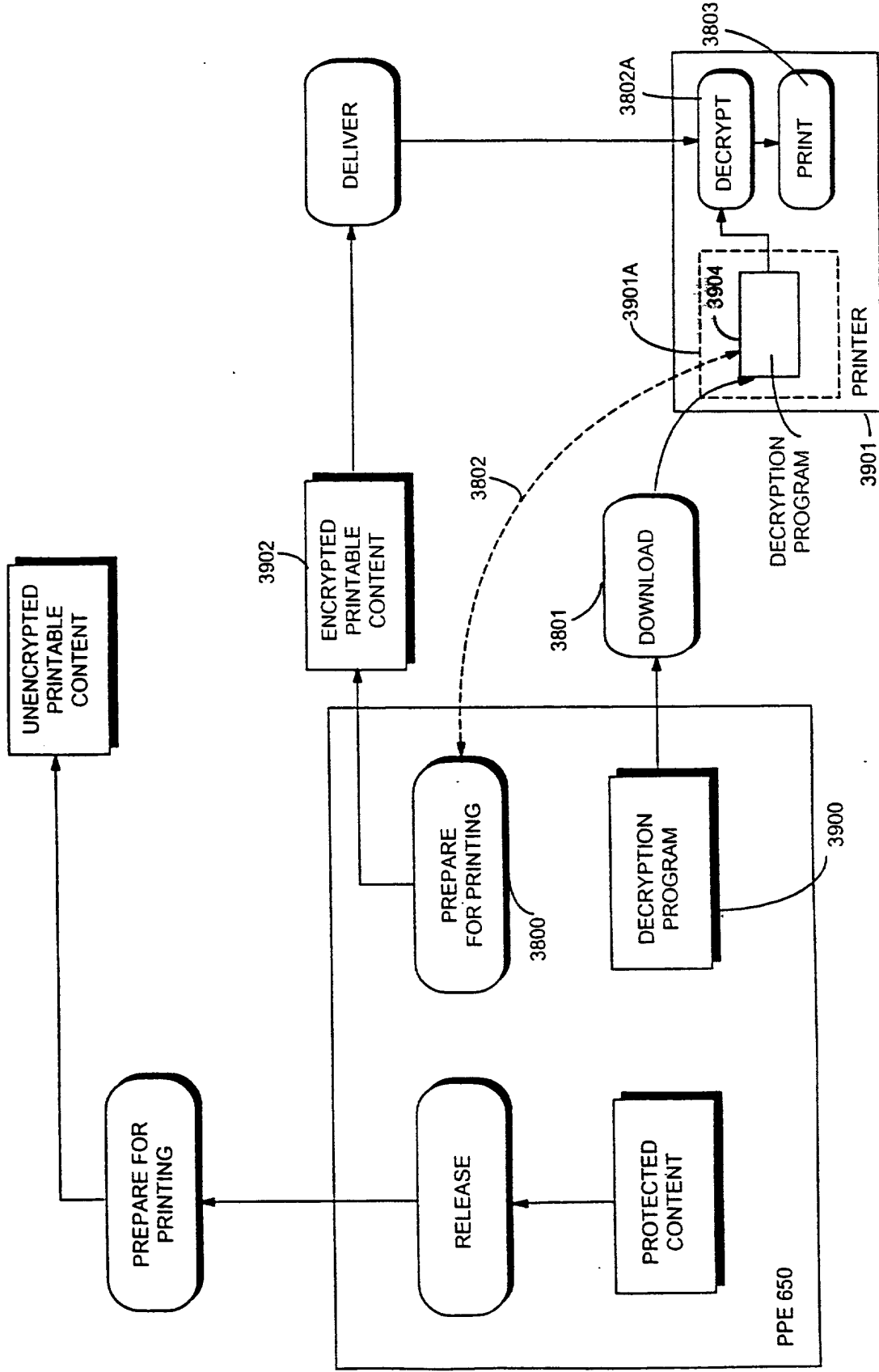


FIG. 70B

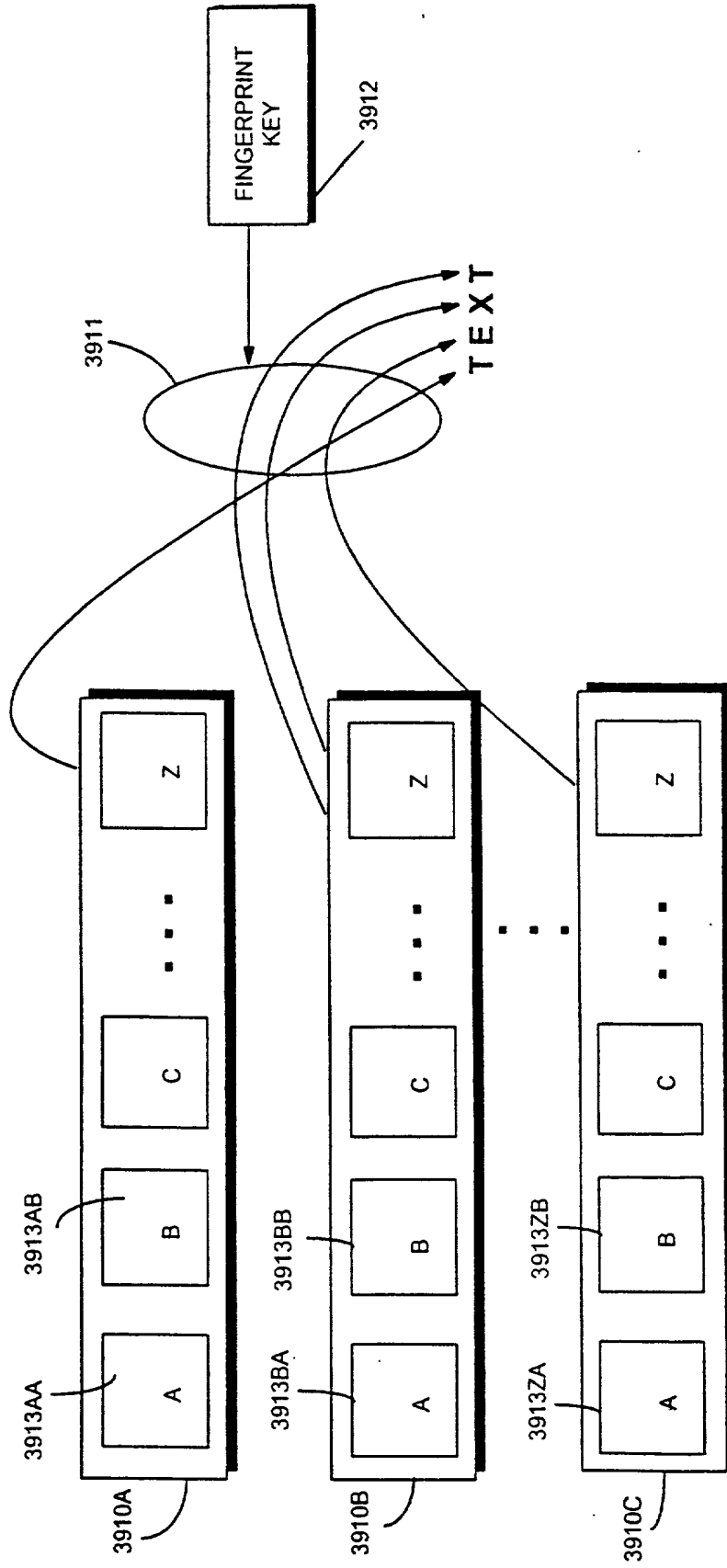


FIG. 70C

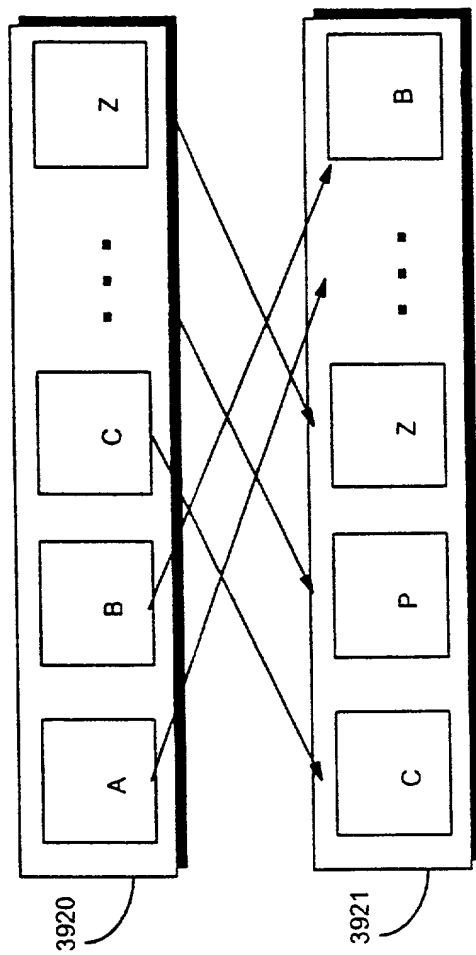
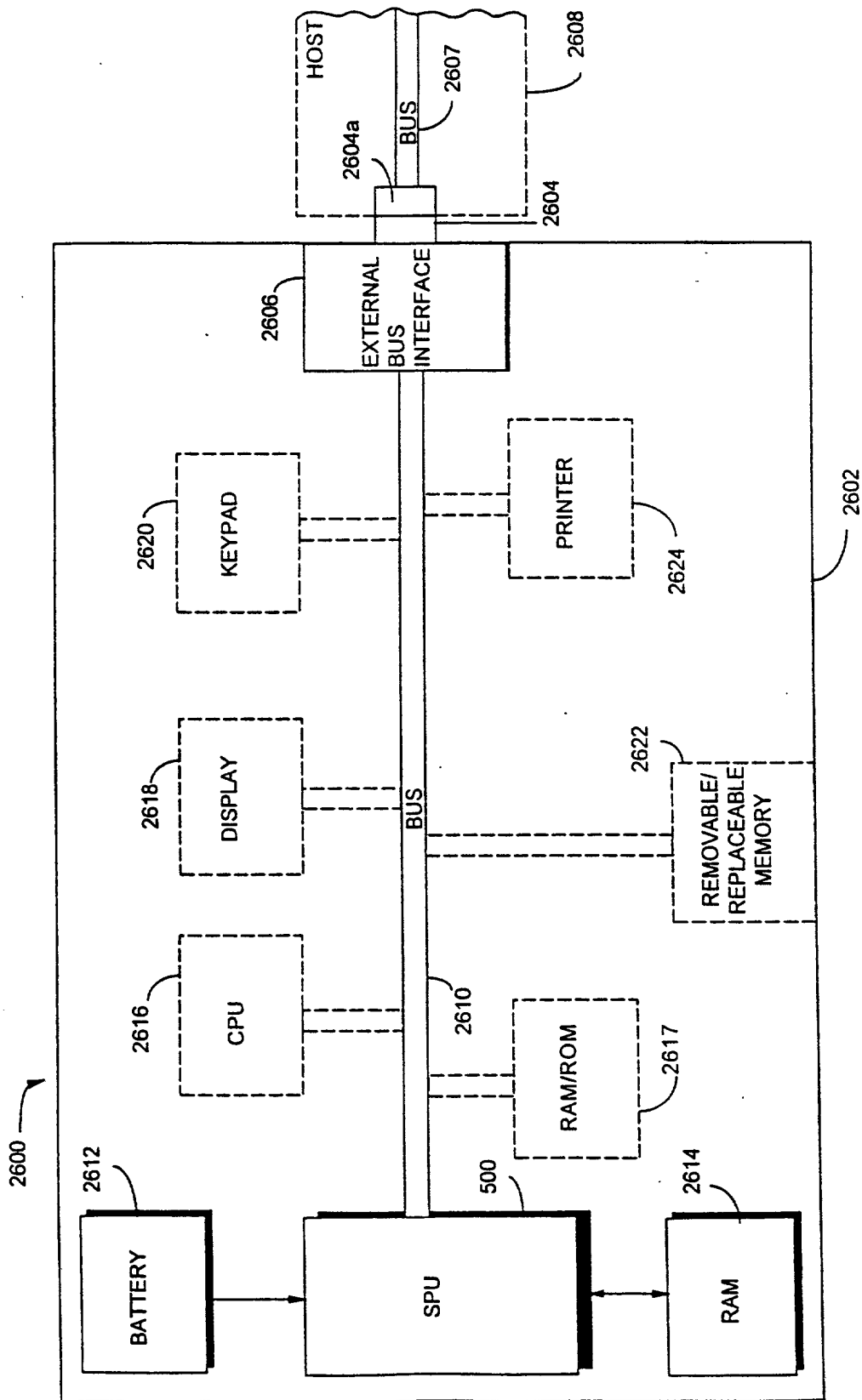


FIG. 71

PORTABLE APPLIANCE



LOG IN USER INTERFACE

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A screenshot of a log-in user interface. It features a rectangular box with a thick border. Inside, on the left, are two input fields: the first is labeled 'USER NAME:' and contains the text 'SHEAR, V.'; the second is labeled 'PASSWORD:' and contains five asterisks. Below these is a checkbox labeled 'LOGIN AT STARTUP'. On the right side of the box are three buttons stacked vertically: 'LOGIN', 'CANCEL', and 'HELP'. A curved arrow points from the text 'LOG IN USER INTERFACE' to the top-left corner of the box. The number '182' is positioned at the top right, with a curved arrow pointing to the top-right corner of the box.

FIG. 72A

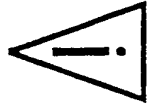
FIG. 72B

A screenshot of a property request confirmation dialog. It features a rectangular box with a thick border. In the top-left corner is a warning icon (a triangle with an exclamation mark). To its right, the text 'YOU HAVE REQUESTED THESE PROPERTIES:' is displayed. Below this text, the property name 'LOONEY TUNES NEWS!' is shown. To the right of the property name are two buttons: 'APPROVE' and 'SUSPEND'. In the bottom-left corner is a button labeled 'PROPERTY INFO'. In the bottom-center, the text 'Your Cost: \$7.50' is displayed. In the bottom-right corner, the text 'MORE OPTIONS' is followed by a small icon of a document with a question mark. A curved arrow points from the number '2660' to the 'CANCEL' button. Another curved arrow points from the number '2662' to the 'APPROVE' button. A third curved arrow points from the number '2664' to the 'MORE OPTIONS' text.



FIG. 72D

FIG. 72D



YOU HAVE REQUESTED THESE PROPERTIES:

**LOONEY TUNE NEWS!**

PROPERTY INFO

YOUR COST : \$7.50

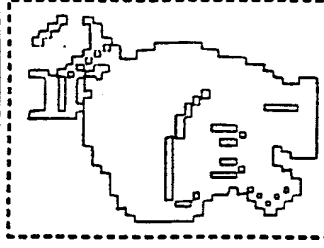
APPROVE

SUSPEND

CANCEL

More Options ☒

Show Thumbnail



PROPERTY:	SIZE:	PUBLISHER:	AMOUNT:	UNITS:	COST/UNIT:	TYPE:	USE?	LINKS:	HIST:
CHUCK JONES BIOGRA...	256KB	WARNER NEW MEDIA	64	KBYTE	\$1.25	PREVIEW	✓	●	
▼ BUGS BUNNY.JPE...	1MB	WARNER NEW MEDIA	1	RECORD	\$5.00	DISPLAY	✓	●	
BUGS BUNNY.JPEG...	1MB	WARNER NEW MEDIA	10	RECORD	\$3.50	DISPLAY		●	
BUGS BUNNY.JPEG...	1MB	WARNER NEW MEDIA	25	RECORD	\$2.50	DISPLAY		●	
FRIZ FRELENG BIOGRA...	256KB	WARNER NEW MEDIA	120	SECTOR	\$5.00	PRINT			
TEX AVERY BIOGRAP...	256KB	WARNER NEW MEDIA	50	PERCENT	\$2.50	COPY			
► DUCK! RABBITI DU...	64MB	WARNER NEW MEDIA	7.0	MINUTE	\$7.50	COPY-PRO			
MEL BLANC BIOGRAPH...	256KB	WARNER NEW MEDIA	1	SPECIAL	\$25.25	INSTALL			
LOONEY TUNES DATAB...	600MB	WARNER NEW MEDIA	1	OBJECT	\$2000.00	ALL			
SET LIMITS...	SHOW BUDGETS	ACQUIRE BUDGET...	HISTORY ..	TRANSFER..	PREFERENCES	FEEDBACK	HELP'		

# FIG. 73

10027986-123101

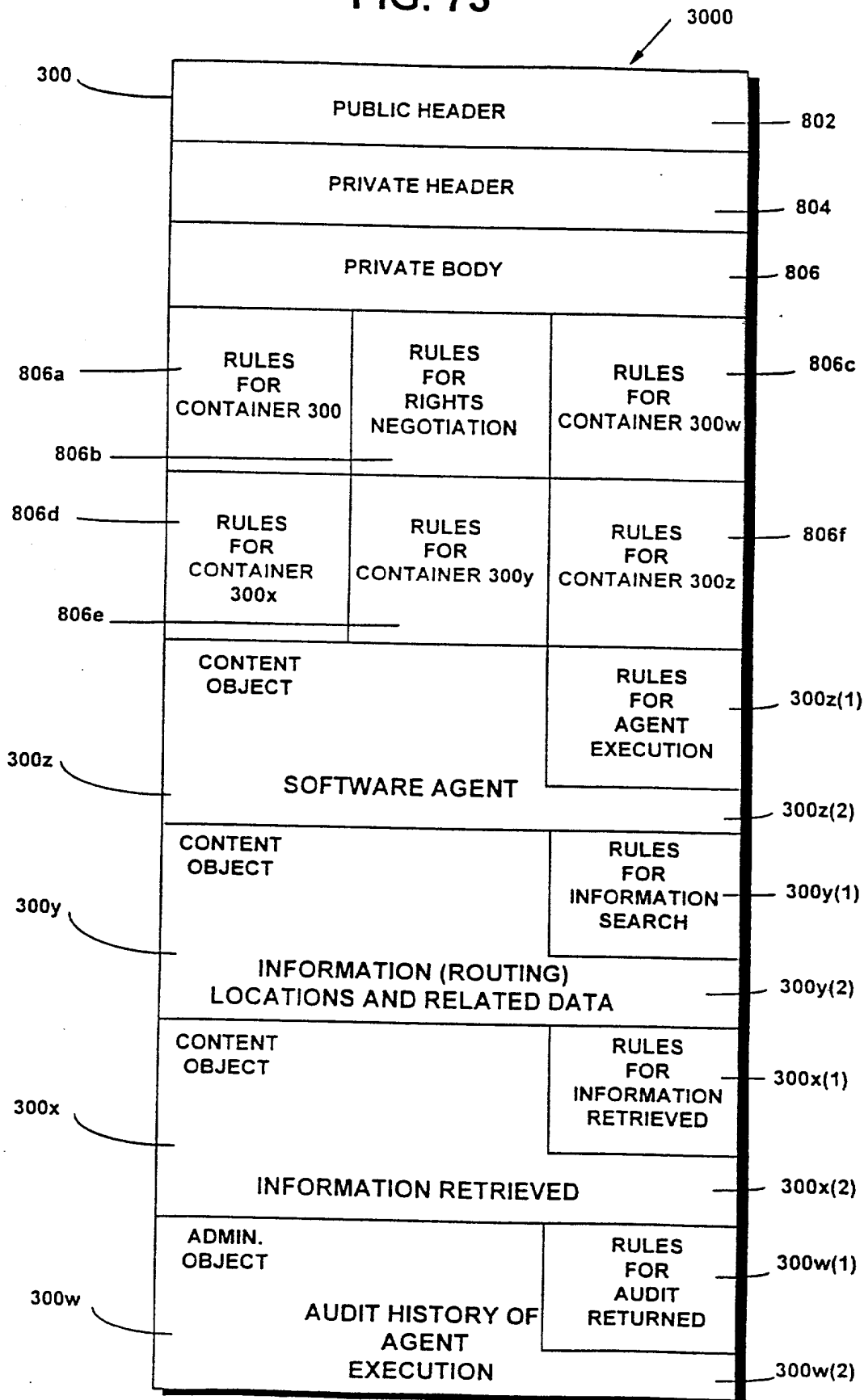
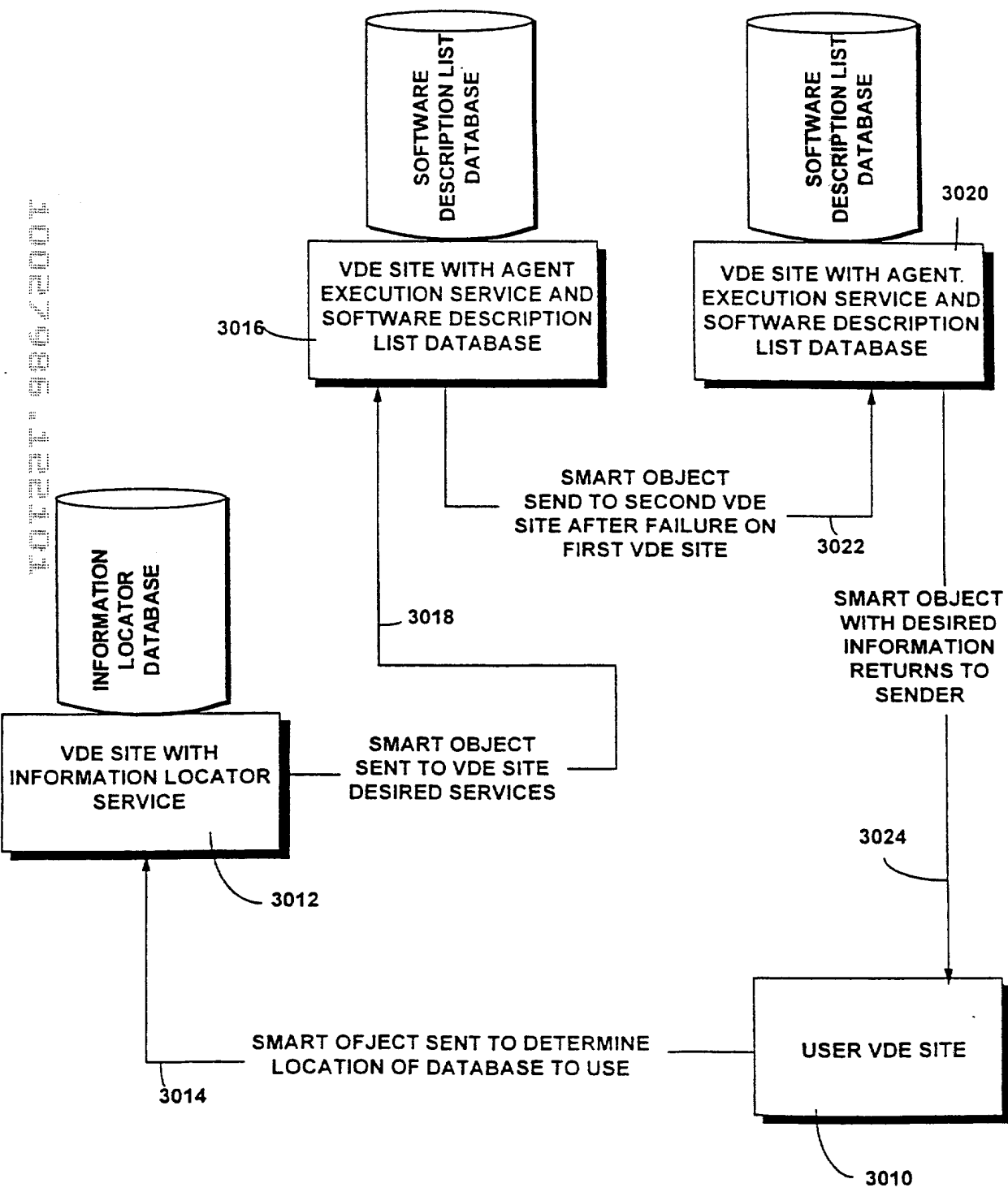
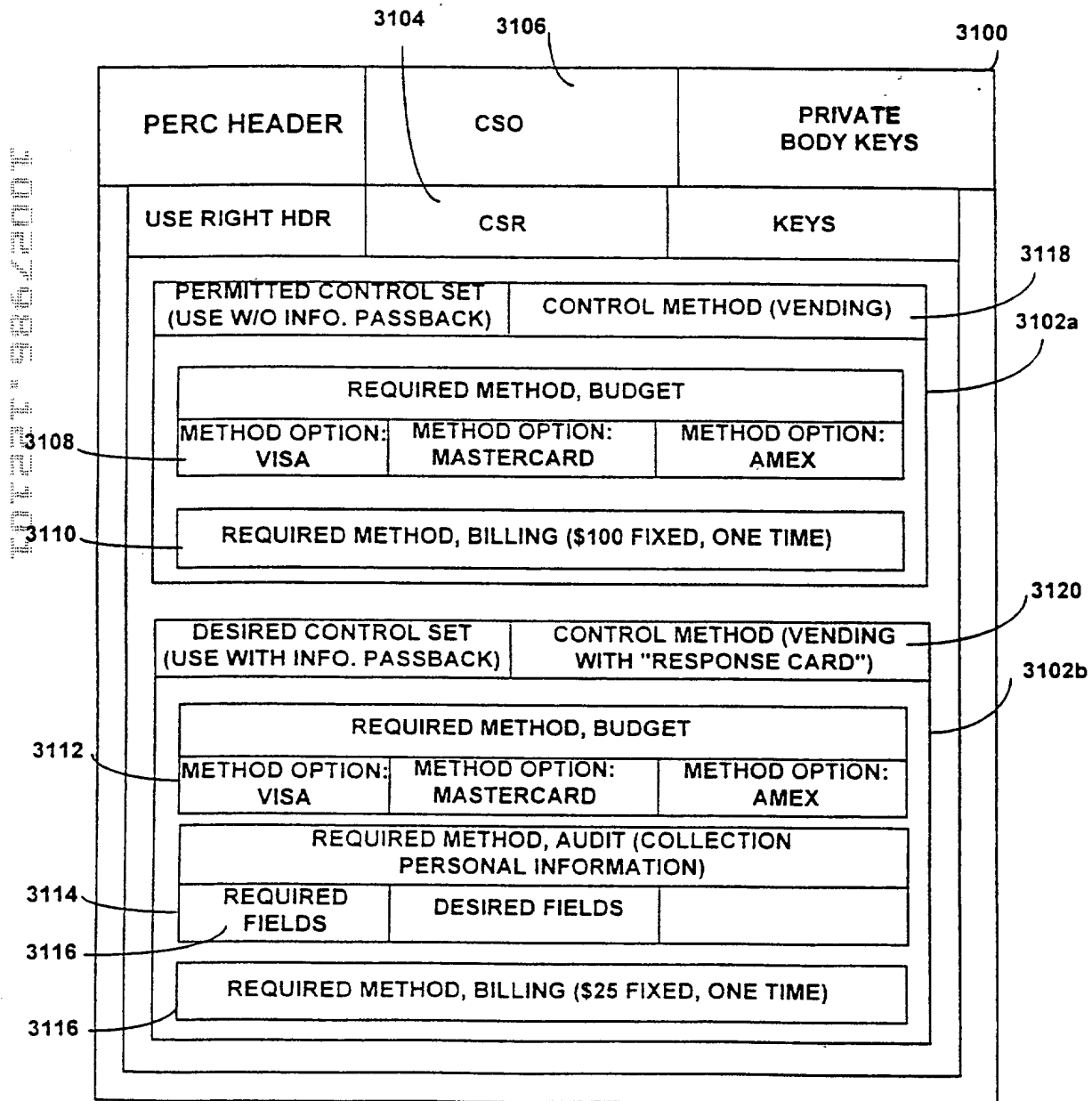




FIG. 74



# FIG. 75A



# FIG. 75B

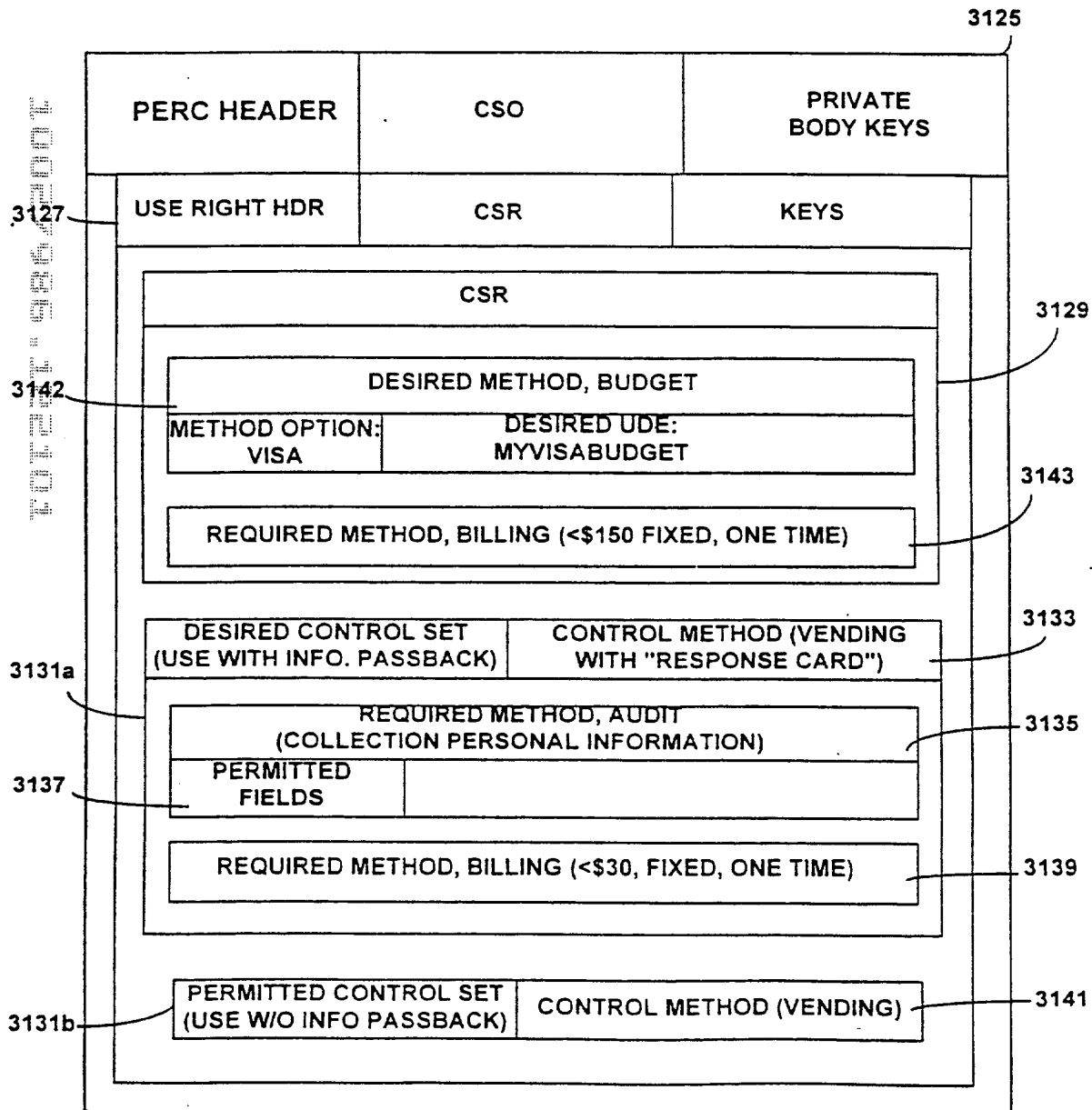


FIG. 75C

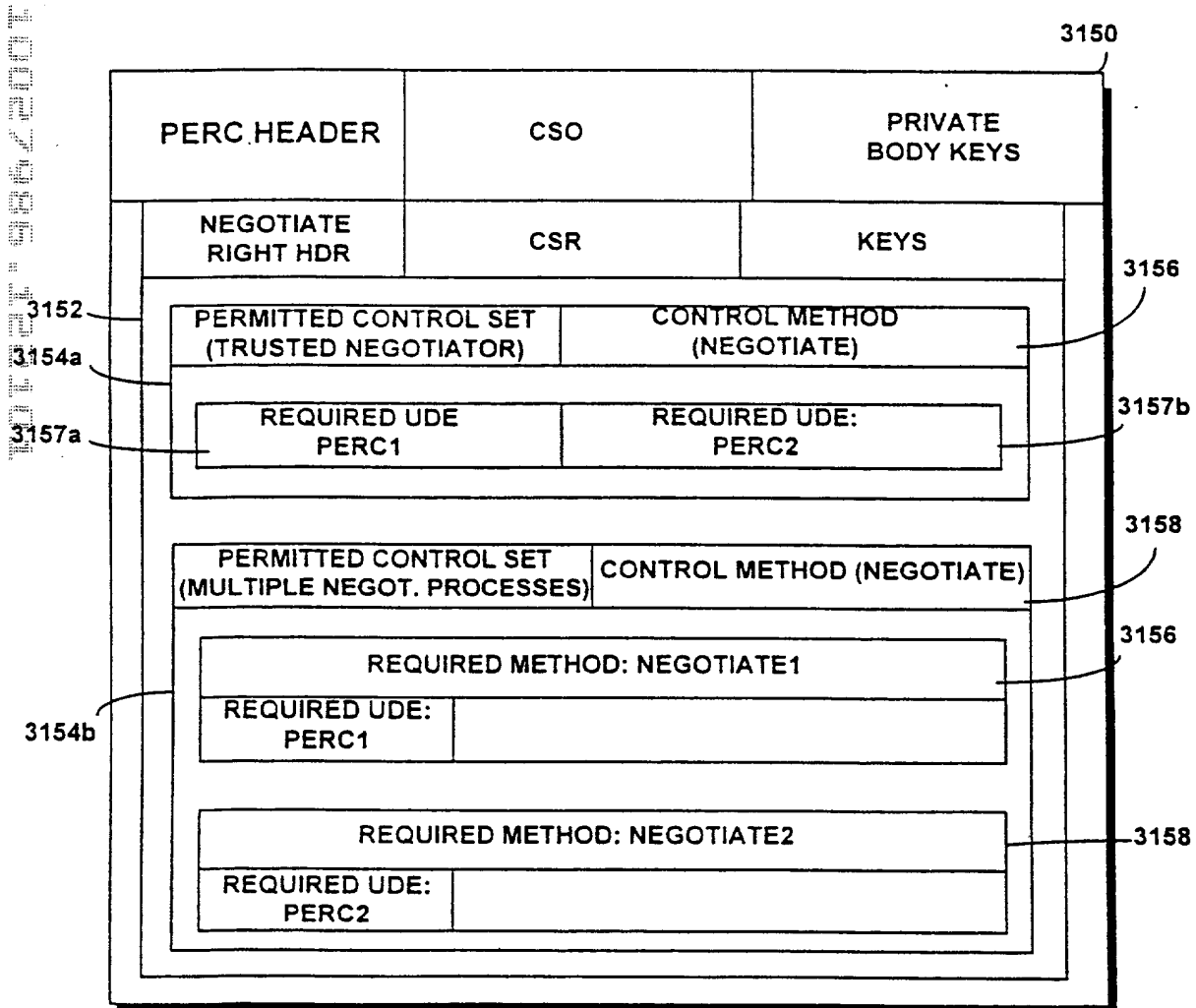
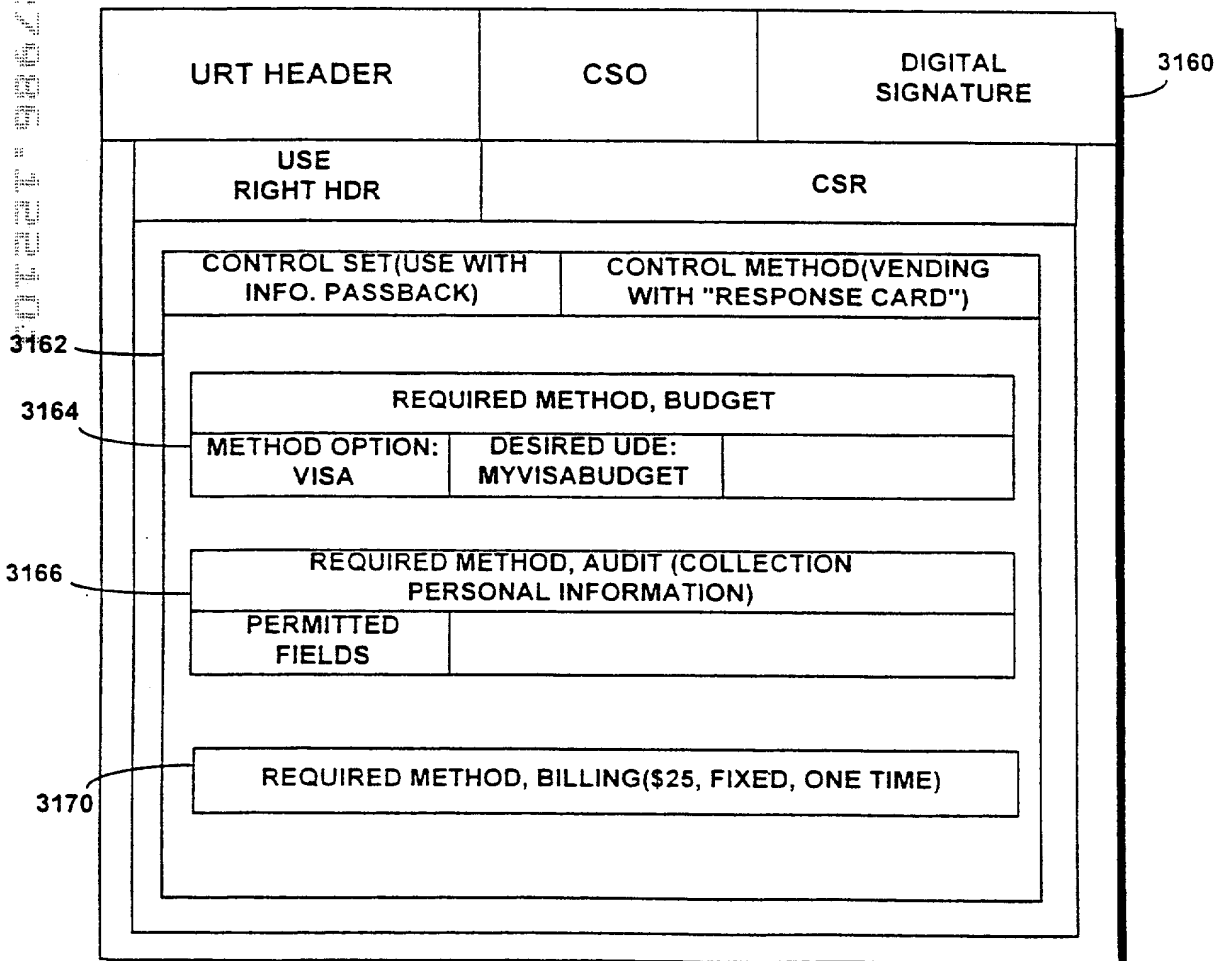


FIG. 75D

10027906 122100227906



10027986-1221001

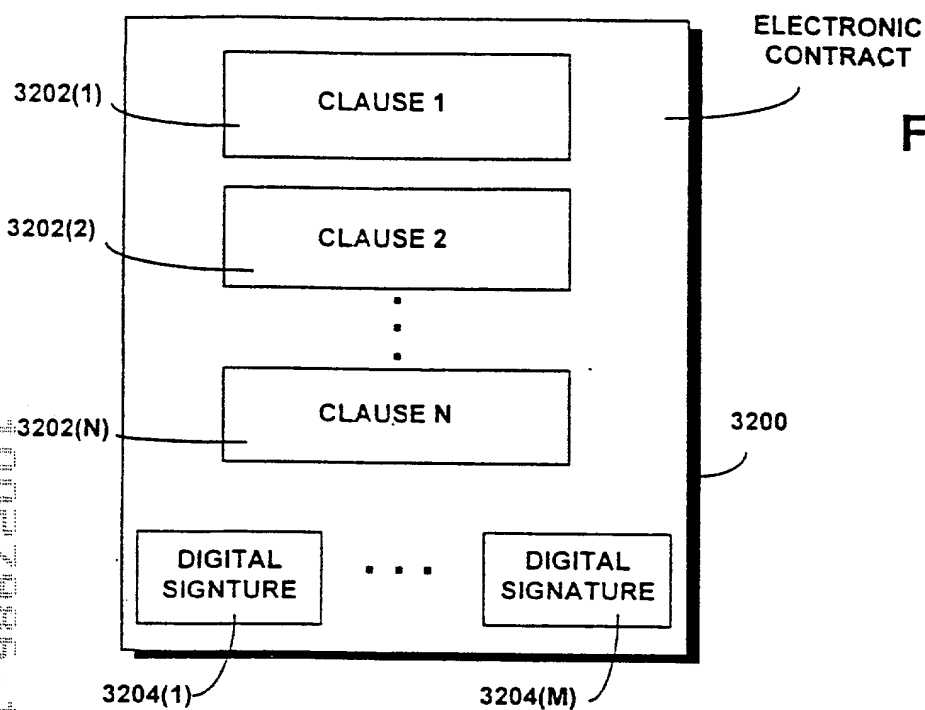


FIG. 75E

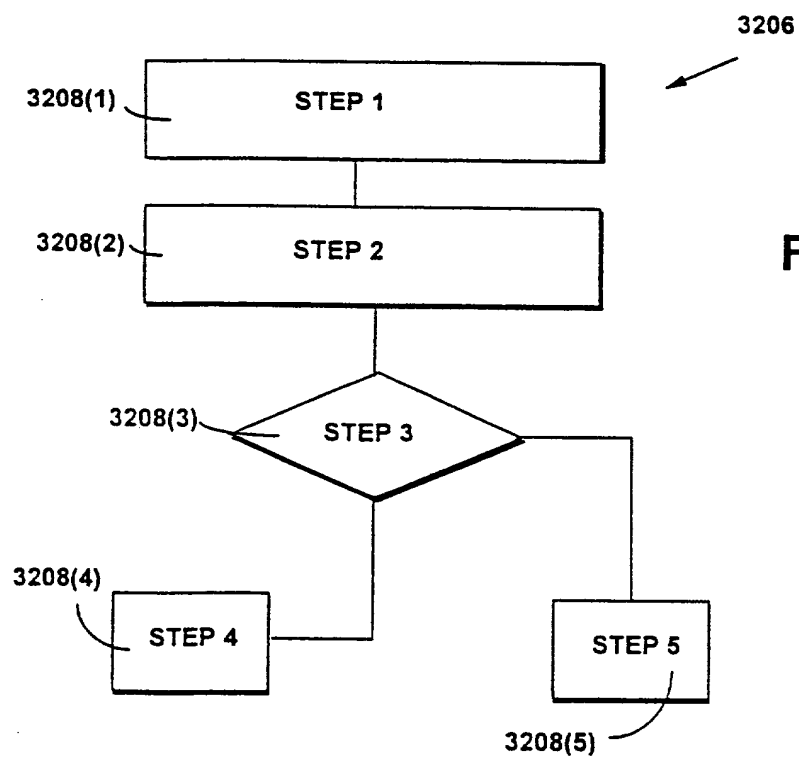


FIG. 75F

FIG. 76A

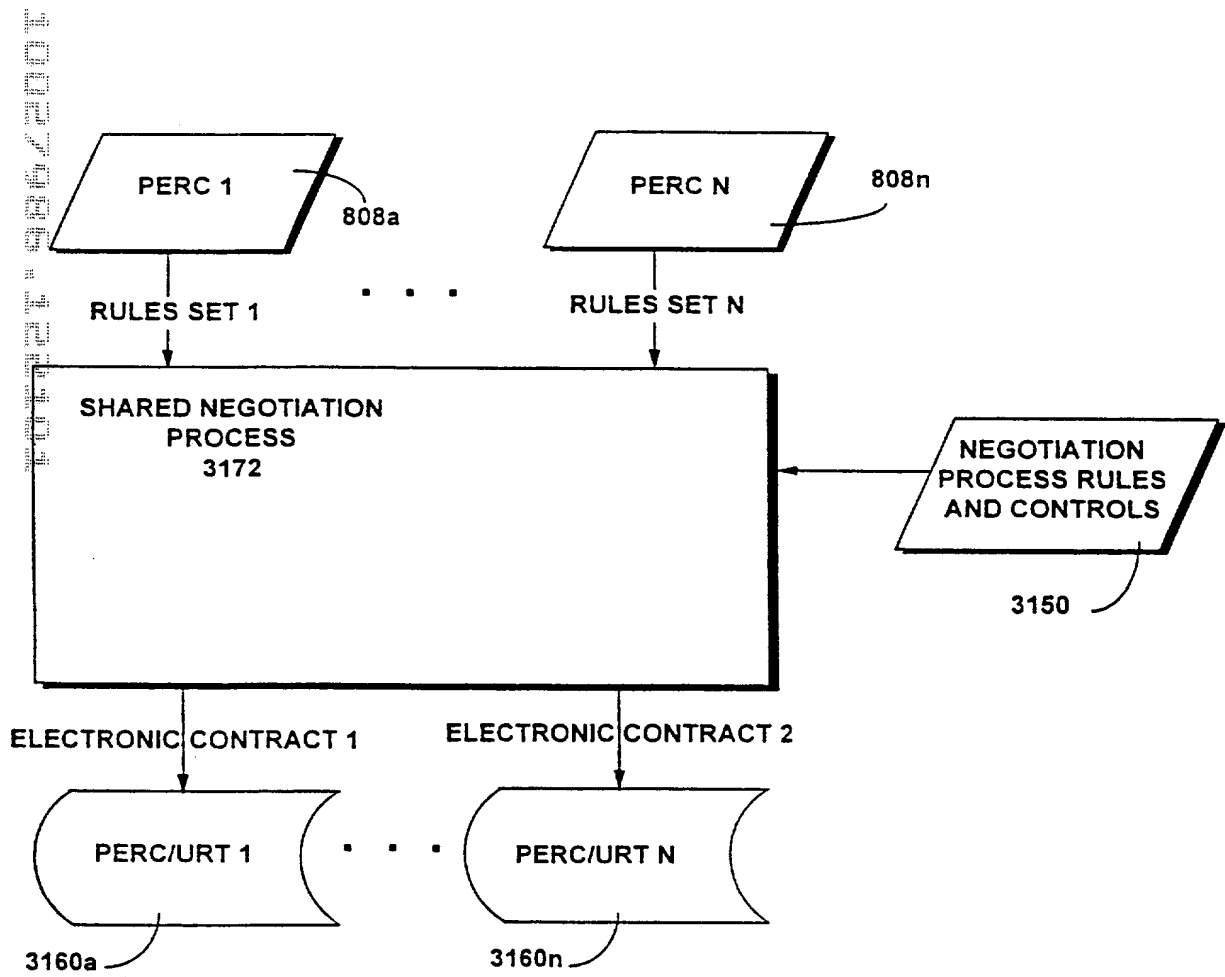


FIG. 76B

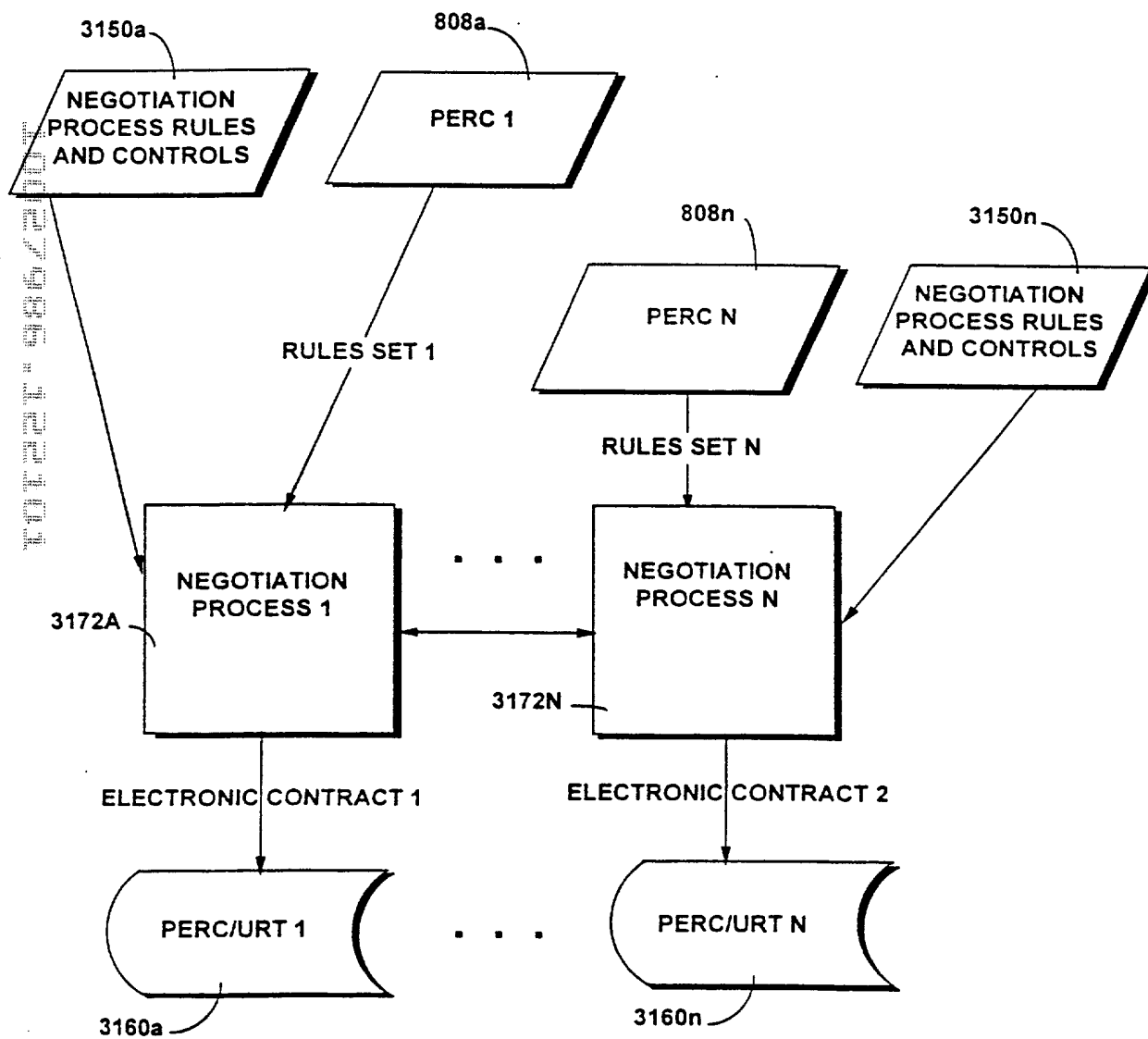
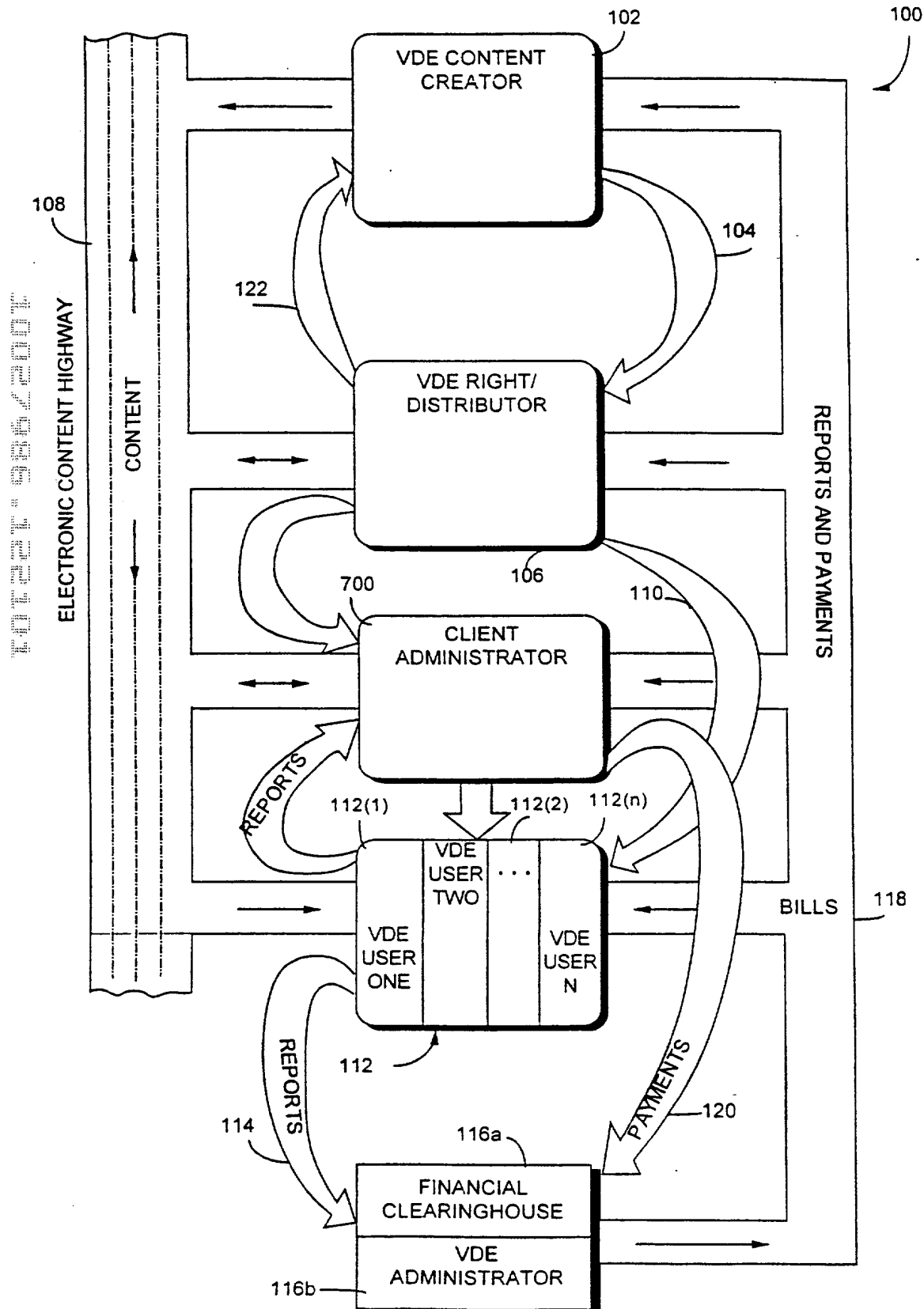
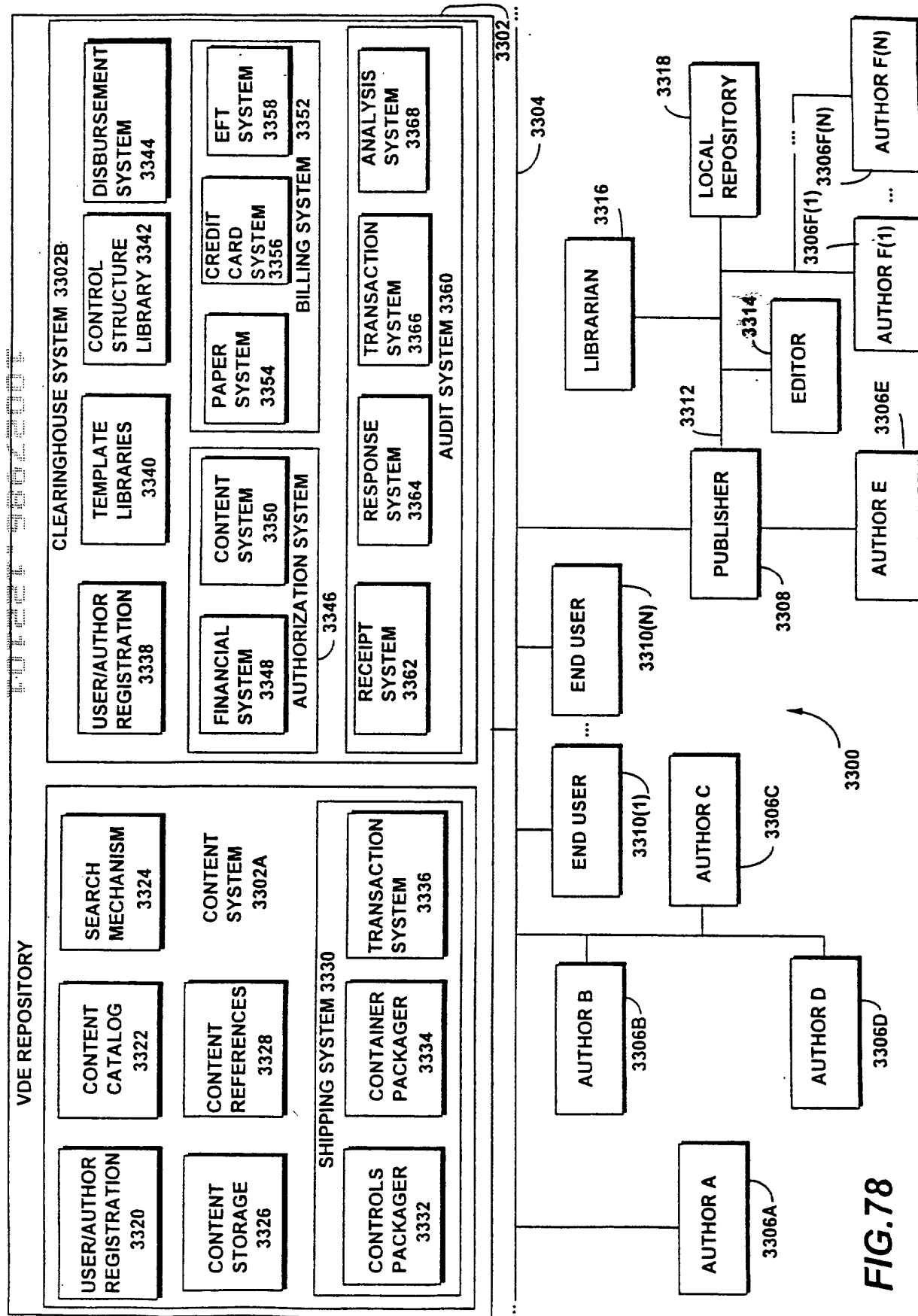




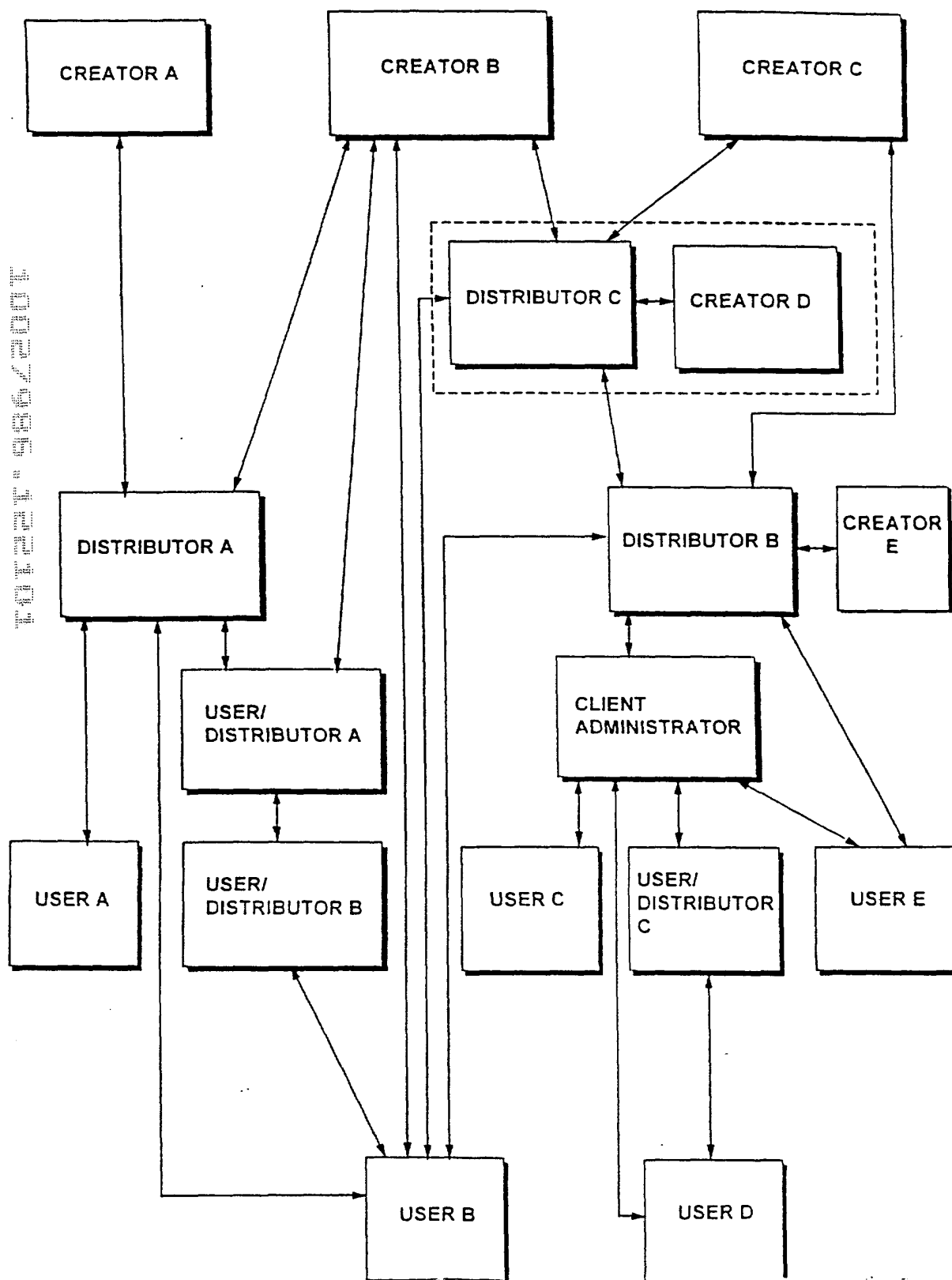
FIG. 77





**FIG.78**

FIG. 79



**FIG. 80**

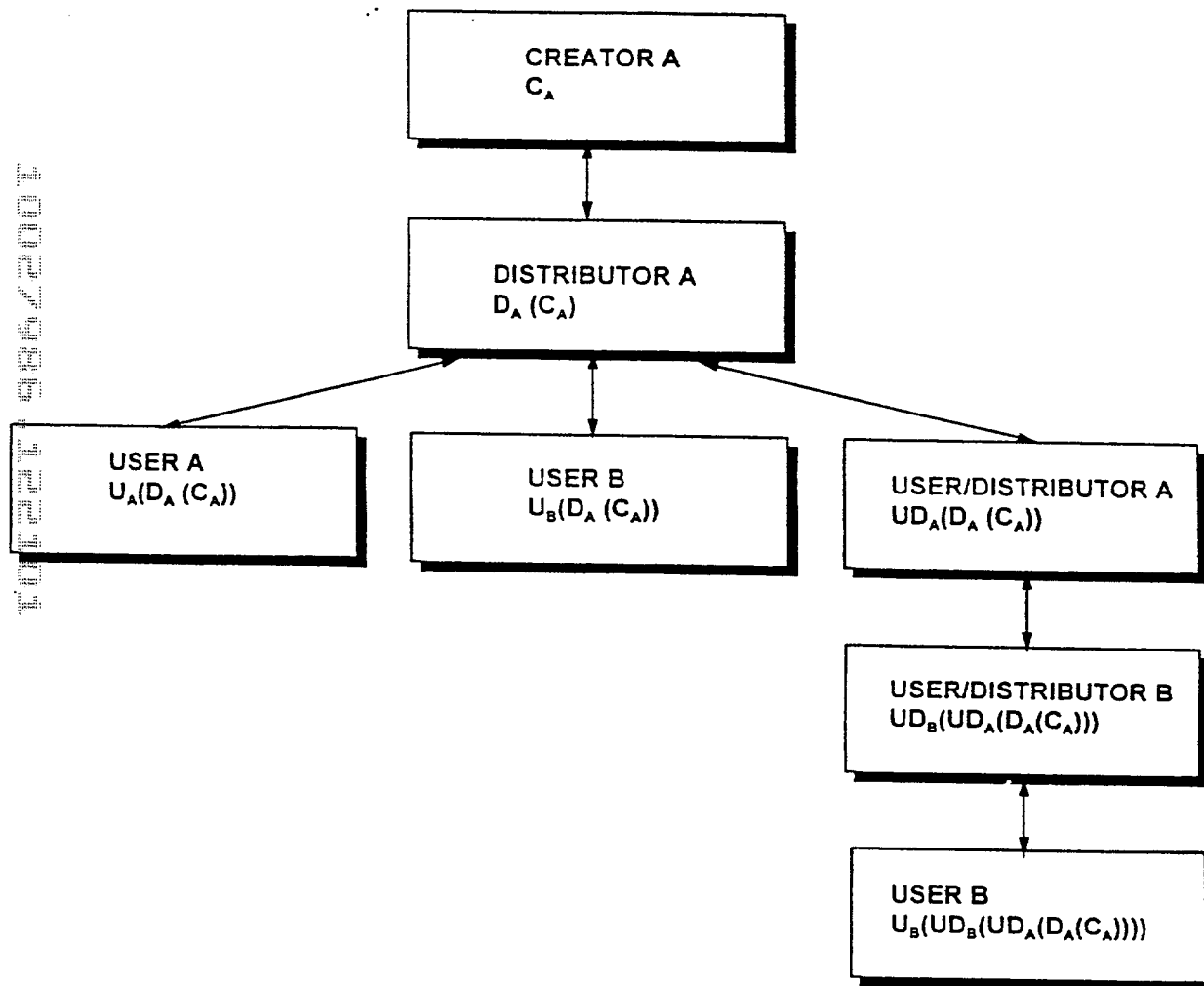


FIG. 81

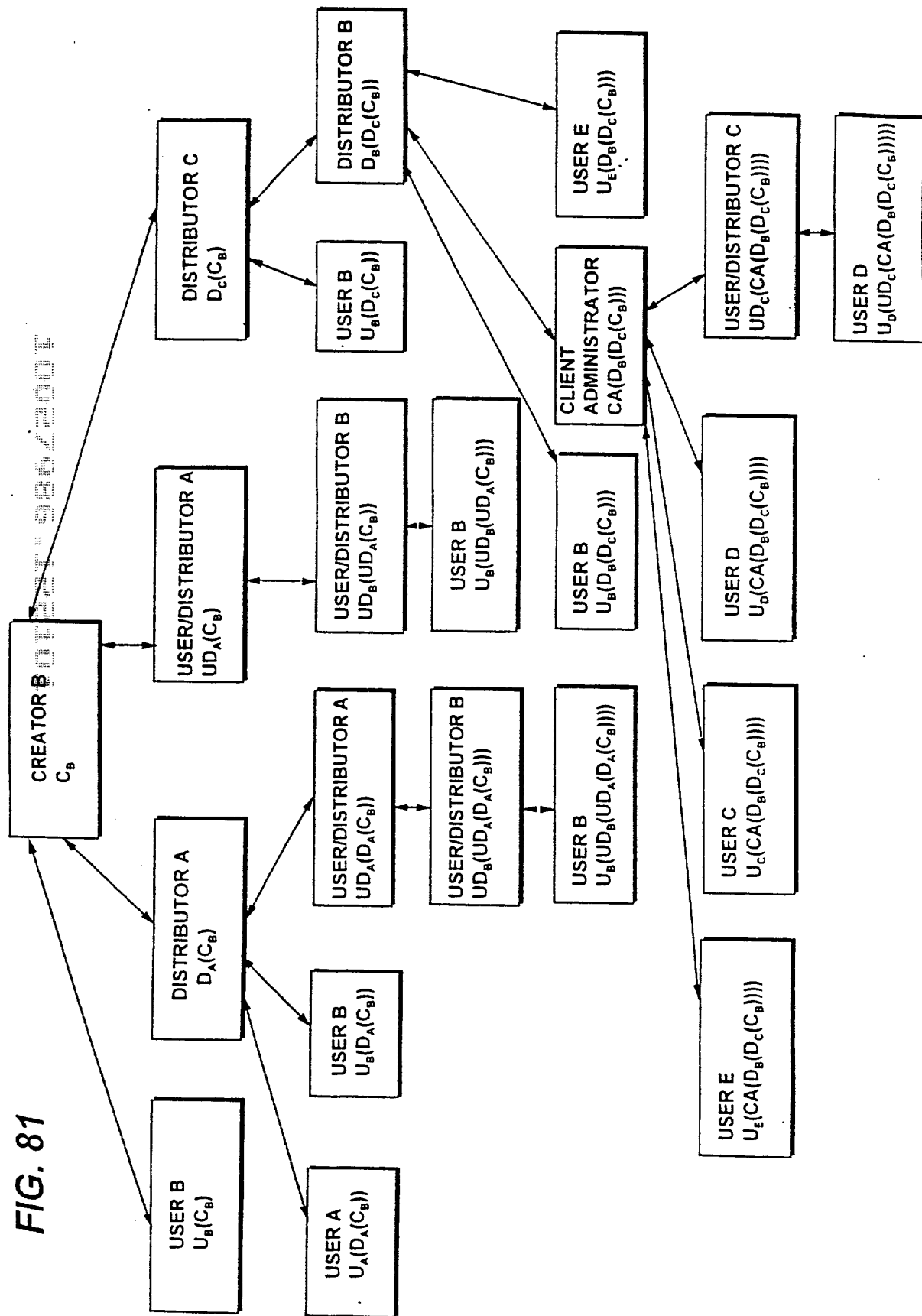


FIG. 82

FOI 221 9862001

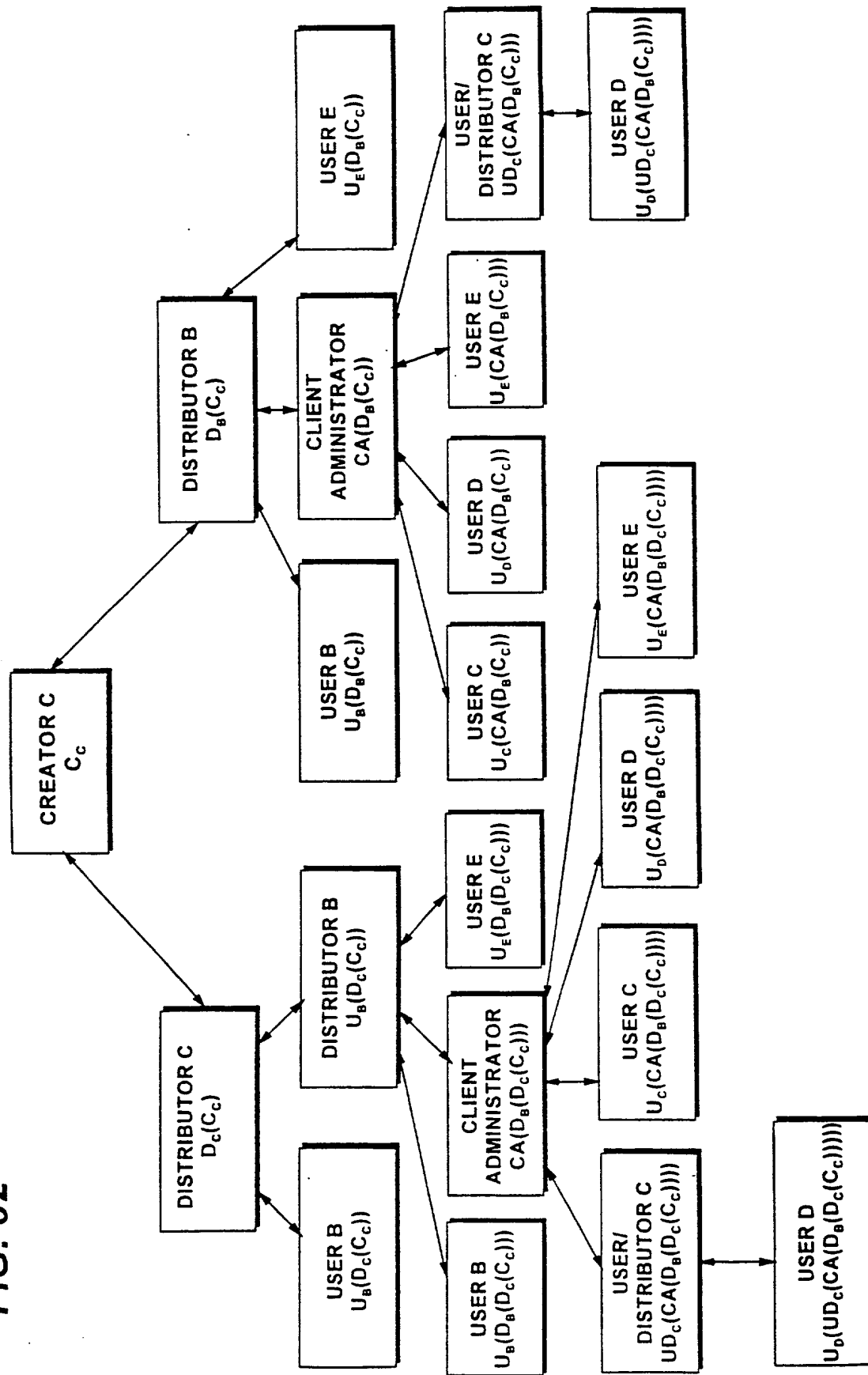
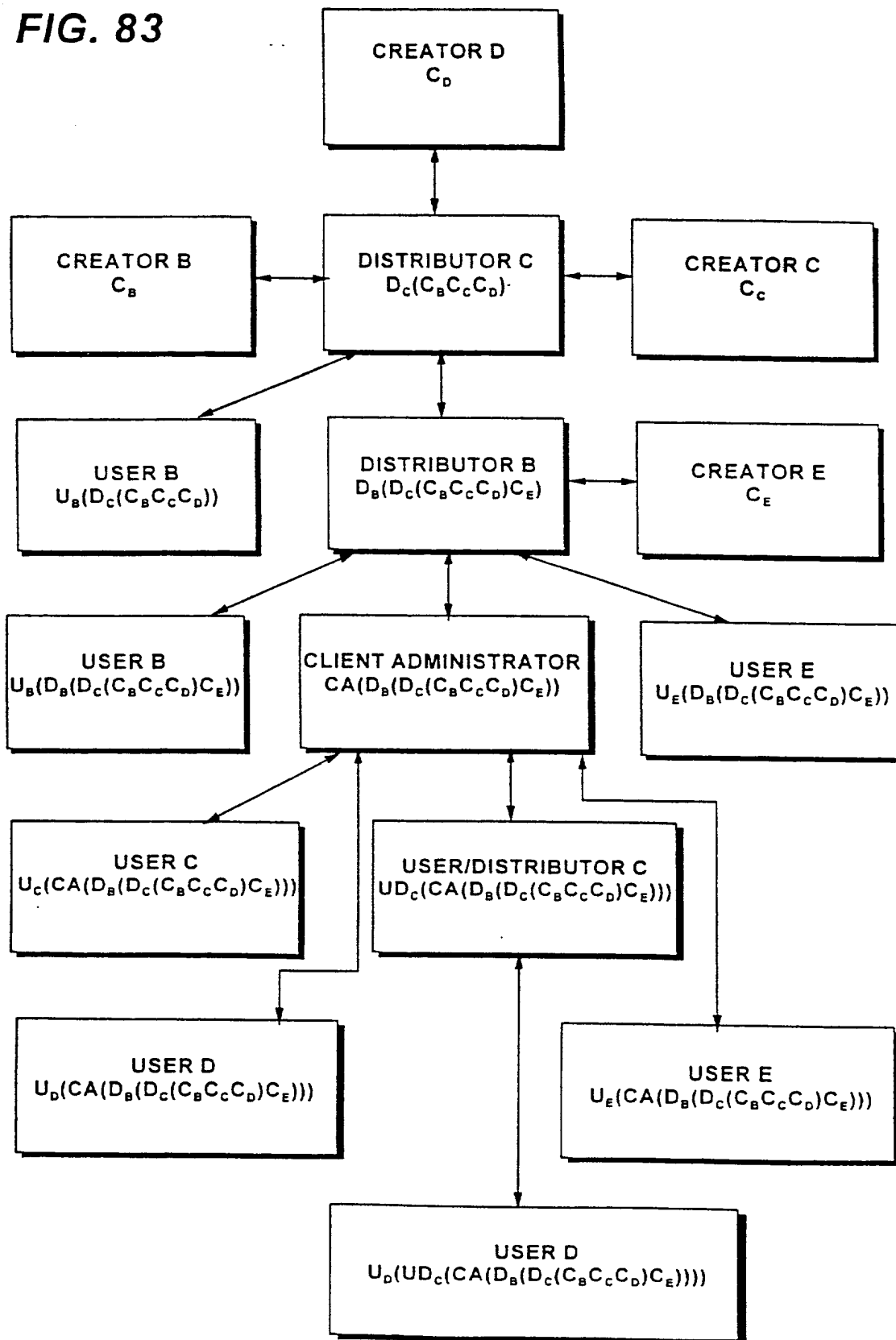
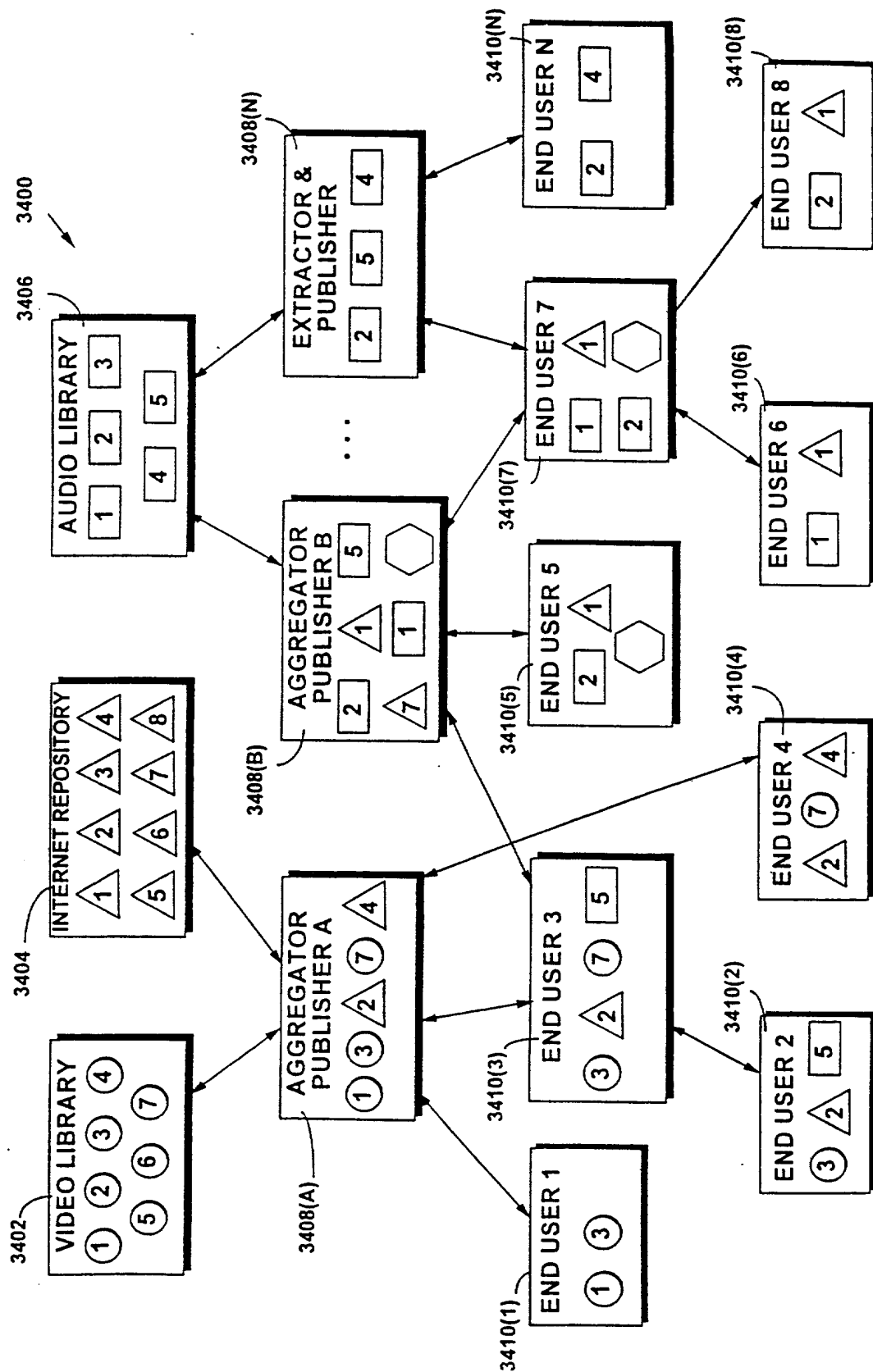


FIG. 83

10027596-12104







**FIG. 85**

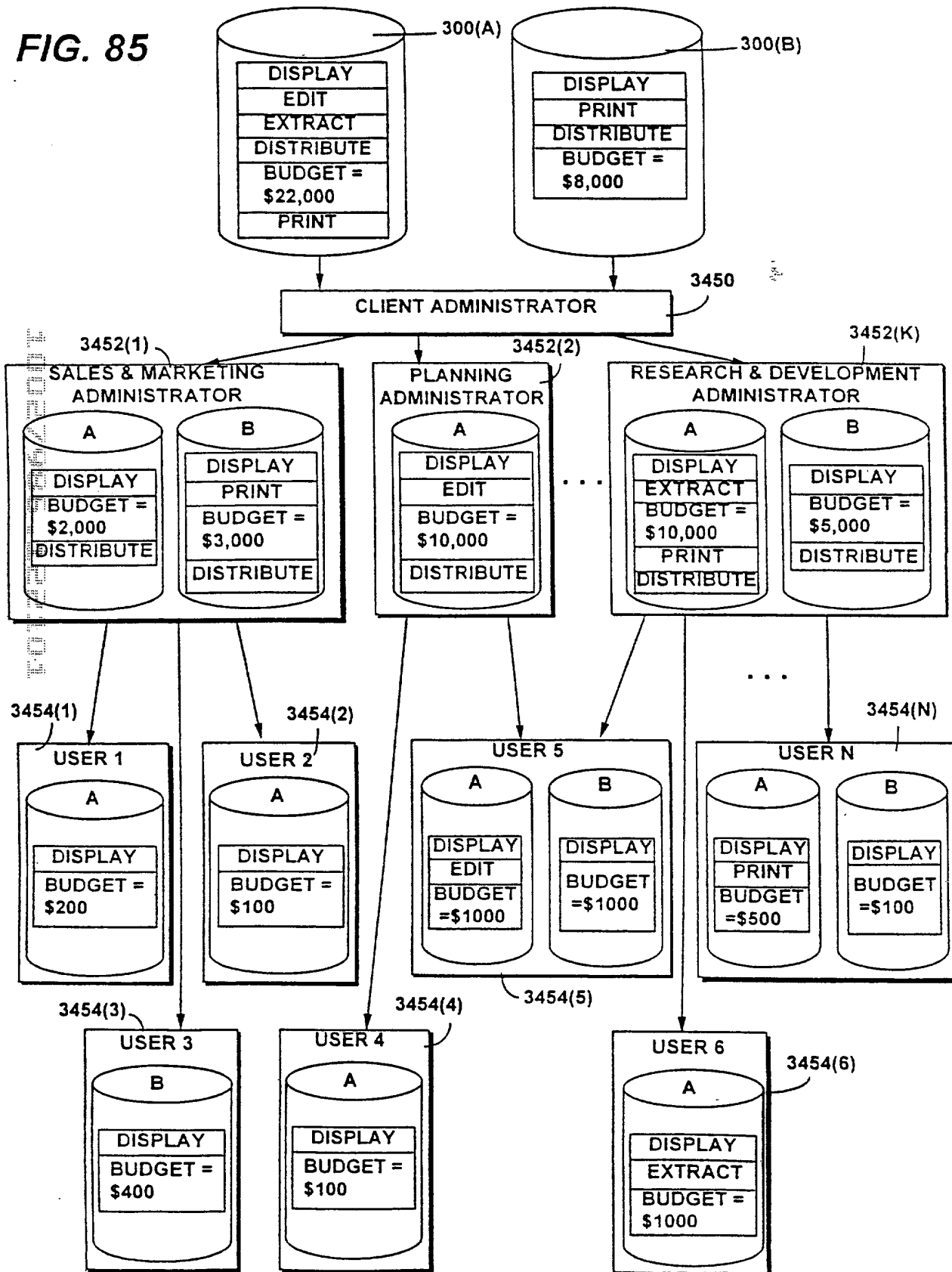


FIG. 86

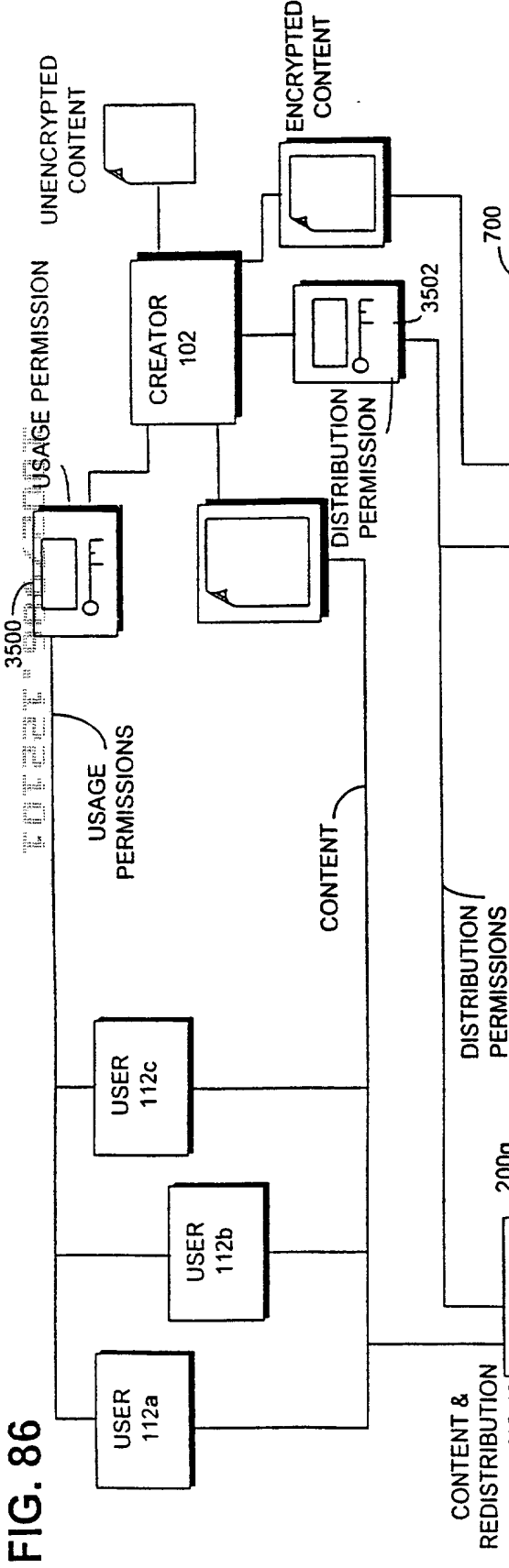
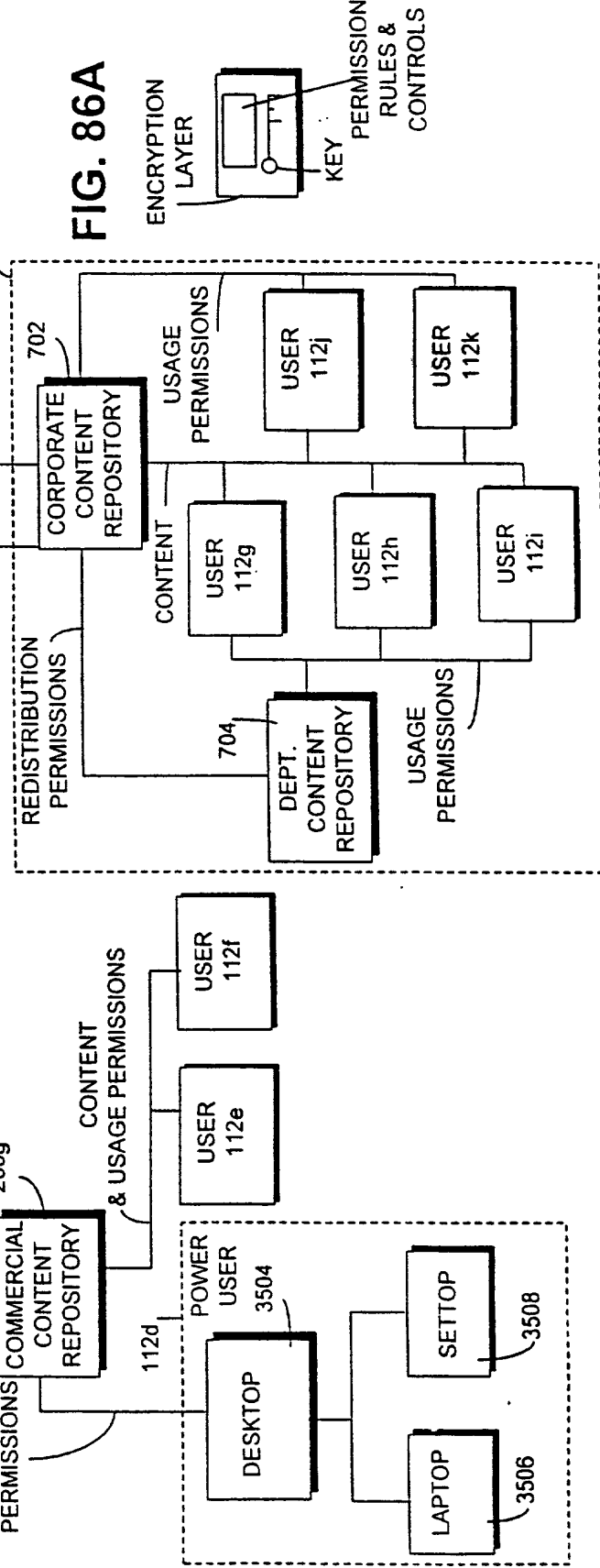


FIG. 86A



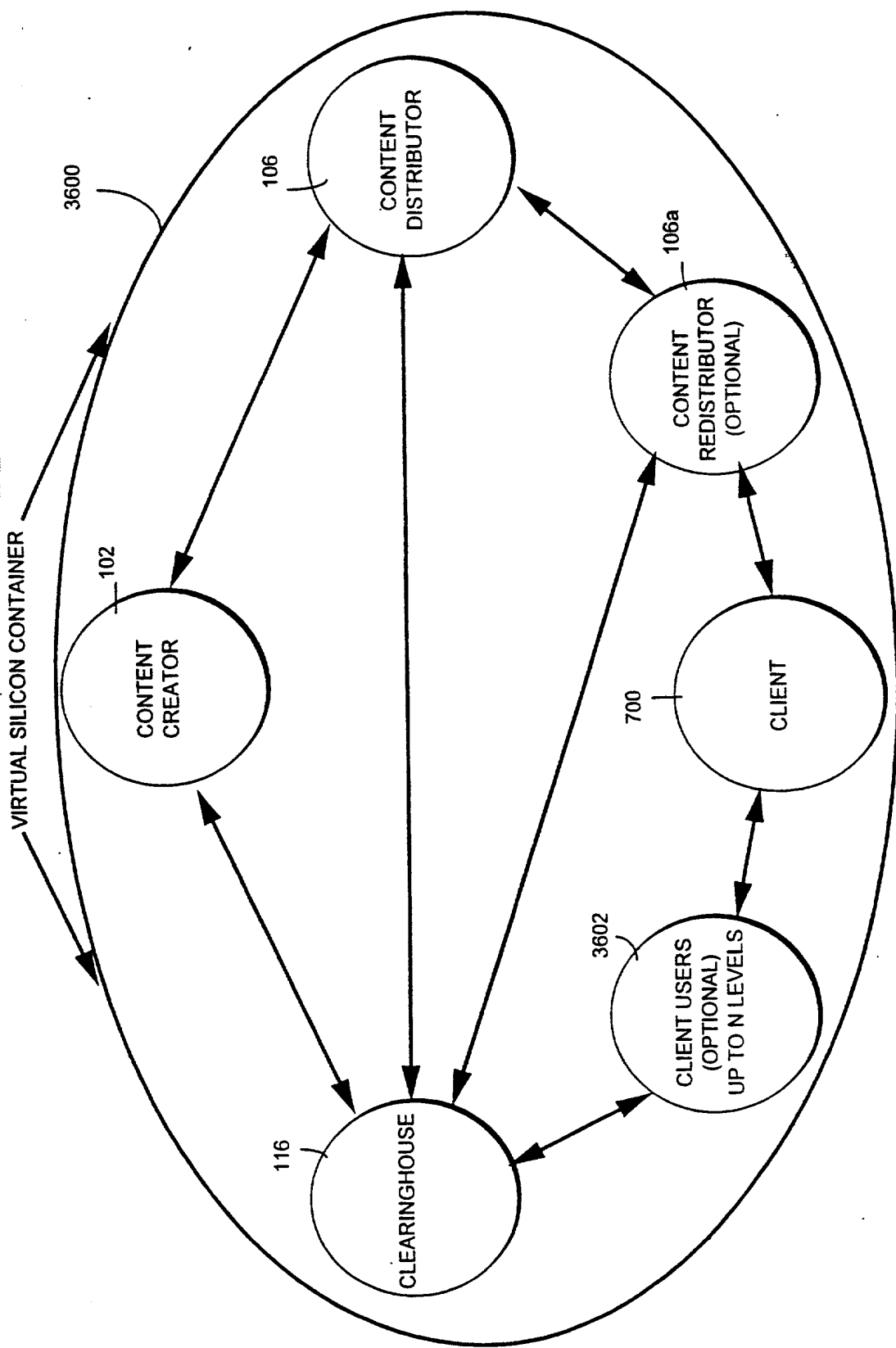


FIG. 87